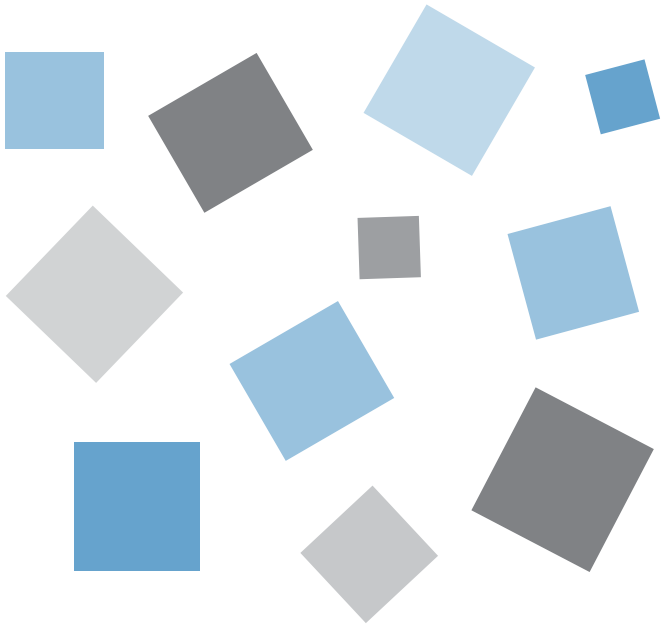
MT100

Application software

USER'S MANUAL

MANUAL NO. APS(MT100)-UM-151



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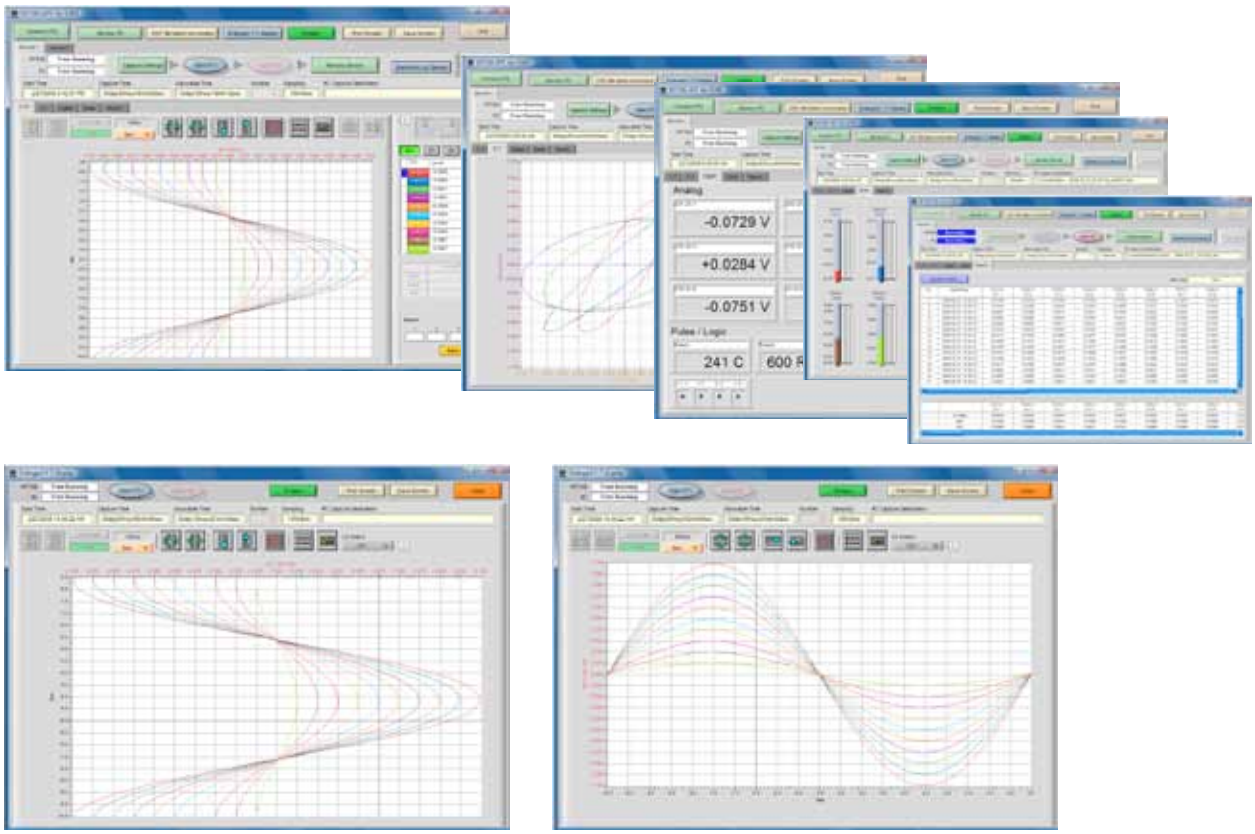
1. Main Features

1-1 A Variety of Display Formats

Data can be viewed in Y-T, X-Y, Digital, Meter, and Report formats, on large, easy-to-read screens.
In the Y-T display screen, display can be either enlarged or scrolled vertically.

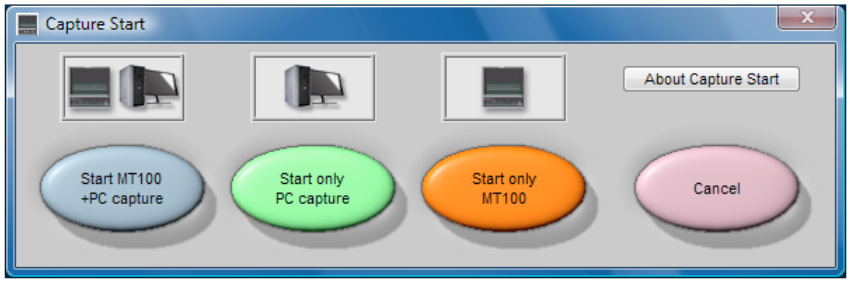


1-2 Simple and Easy to Use

Large icons make it simple and easy to control the waveforms. Time axes, spans, waveform positions can be changed easily.

1-3 Supporting Various Measurement Styles

MT100 provides three types of measurement methods to support a variety of measurement scenes.
The software allows your PC to be connected to the MT100 during stand-alone capturing to collect captured data.
It also allows the PC to be connected to the MT100 during capturing to capture pinpoint data to the PC, proving useful even for maintenance.



1-4 Export to Direct Excel File Function

Captured data can be exported directly to an Excel file and displayed as graphs.
Ready-to-use template files are provided as standard for your convenience.
(Note: The Microsoft Excel program must be installed.)

1-5 Thumbnail Waveform Display

Before replaying captured data, the waveforms can be checked by referring to the small images (thumbnails) provided next to each file name. These thumbnails provide easy confirmation of the data before opening the file.

1-6 Real-time Calculation Functions

During data capture and data replay operations, up to four calculation operations can be performed.

1-7 Send Email when Alarm is Generated

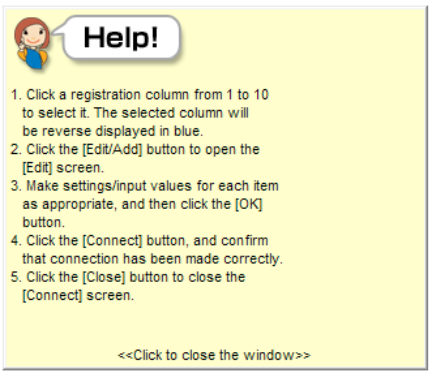
When an alarm is generated, this function enables a notification email to be sent to a mobile phone, for example, thereby ensuring that a check can be performed if required.
(Note: An email sending environment is required.)

1-8 Printing Function, Screen Save Function

The waveform screen can be printed out on a printer, and screen copies saved to a file.
(Note: To use the printing function, the device must be connected to a printer.)

1-9 Help Function

Help buttons that provide simple descriptions of the various functions are assigned to each of the menu setting items to provide ease of use.


Help!
1. Click a registration column from 1 to 10 to select it. The selected column will be reverse displayed in blue.
2. Click the [Edit/Add] button to open the [Edit] screen.
3. Make settings/input values for each item as appropriate, and then click the [OK] button.
4. Click the [Connect] button, and confirm that connection has been made correctly.
5. Click the [Close] button to close the [Connect] screen.
<<Click to close the window>>

2. System Requirements

Make sure that the computer on which you plan to install the software meets the following requirements.

Item	System requirements
OS	Windows 2000, XP, Vista (32Bit, 64Bit)
CPU	Pentium 4: 1.7 GHz or higher
Memory	256 MB or more
HDD	20 MB additional space is required for installing software.
Display	1024 x 768 resolution or higher, 65535 colors or more (16-bit or more)
Other	USB port, TCP-IP port, CD-ROM drive (for installing from CD) Microsoft Excel software (for the Export to Direct Excel File and Display in Excel functions)

CHECKPOINT

Even when using a PC that meets the system requirements, measurement data may not be captured correctly depending on the PC status
(e.g. running other applications or insufficient memory capacity in the storage media used).
Exit all other applications before capturing data to the internal hard disk.

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3. Installing the USB Driver

This chapter describes how to install the USB driver.

3-1 Checking the version of your USB driver

This section describes how to view the version of the USB driver if it is already installed.

(1) Opening "Device Manager"
Select "Control Panel" → "System" → "Hardware" tab or right-click "My Computer", select "Properties" → "Hardware" tab → "System Properties" window, and then click the "Device Manager" button.

(2) In the "Device Manager" window, open "USB (Universal Serial Bus) Controller". Confirm that "Graphtec GL/MT/DM/WR Series USB Driver" is shown. Right-click it and select "Properties".

(3) Updating the driver
Select the "Driver" tab and click the "Driver Details" button.

(4) Select [...\GTCUSBR.SYS] to view the version of the driver file.

3-2 Installing the USB driver

This section describes how to install the USB driver.

(1) Insert the User's Guide CD-ROM provided as a standard accessory into the PC's CD-ROM drive.

(2) Connecting the MT100 to the PC
Connect the MT100 to the PC using the USB cable, and then turn the power on.

(3) Install the USB driver. The installation procedure depends on the type of operating system and whether or not you are installing the driver for the first time.

Windows Vista: Driver software is to be installed for the first time.
Driver software is already installed.

Windows XP: Driver software is to be installed for the first time.
Driver software is already installed.

Windows 2000: Driver software is to be installed for the first time.
Driver software is already installed.

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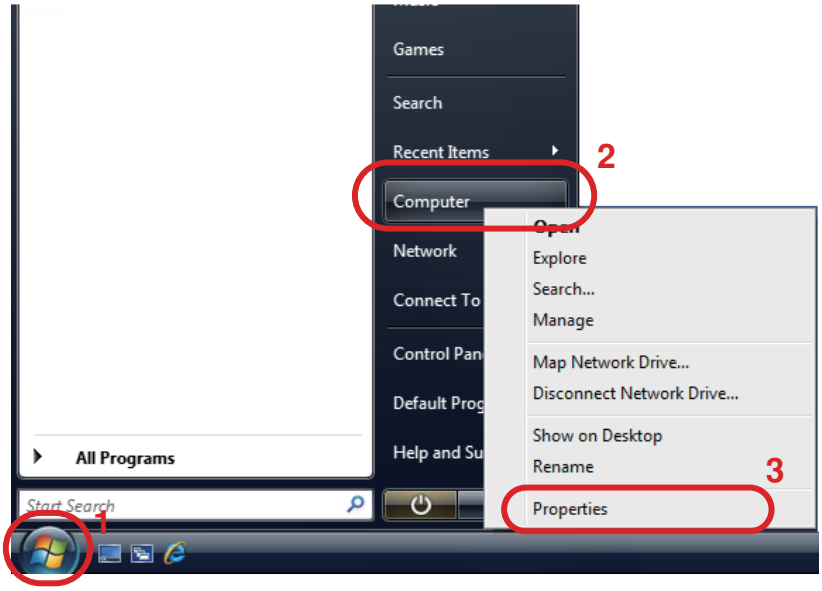
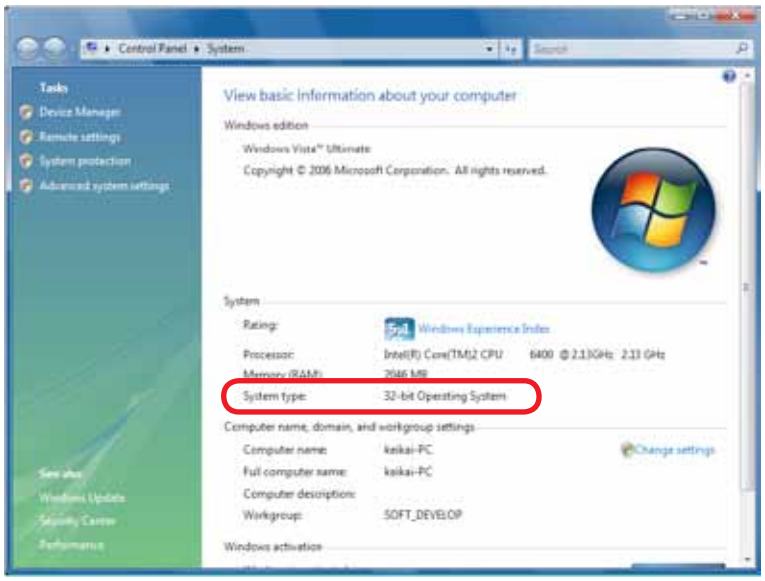
3-2-1 Identifying the 32/64-bit version of Windows Vista

The required USB driver is different between the 32-bit and 64-bit versions of Windows Vista.
Identify the version of Windows Vista in use as follows.

(1) Right-click Computer on the Start Menu, then choose Properties.



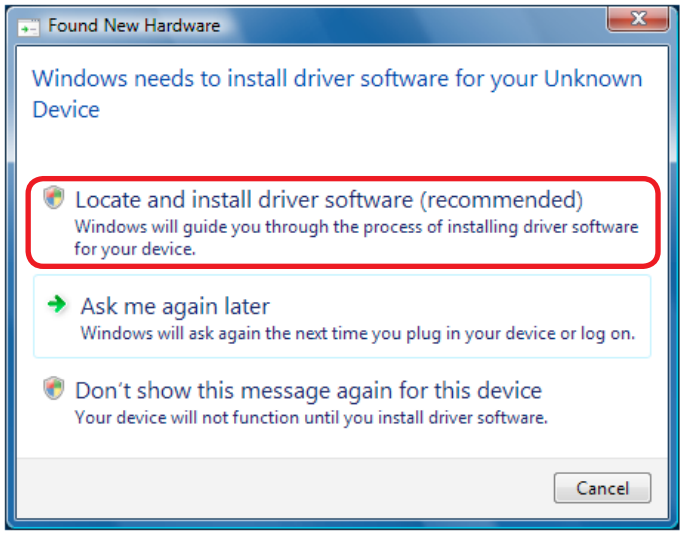
(2) If System Type under System is 64 bit operating system, the system in use is the 64-bit version.



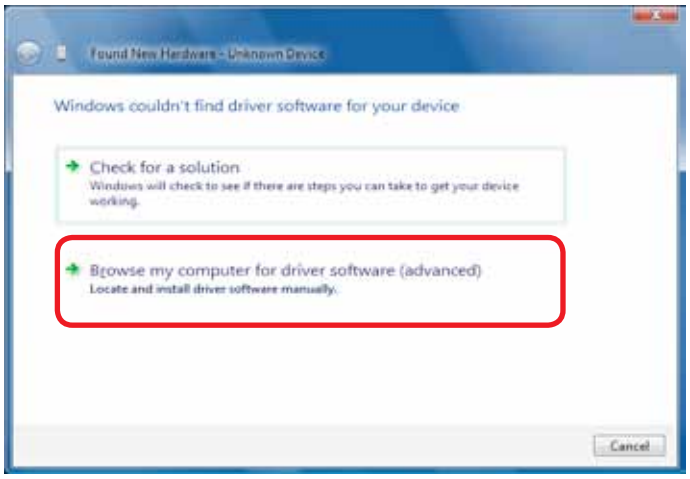
3-2-2 Windows Vista: Driver software is to be installed for the first time.

Connect the USB cable to the PC and TM100. The Found New Hardware message appears.

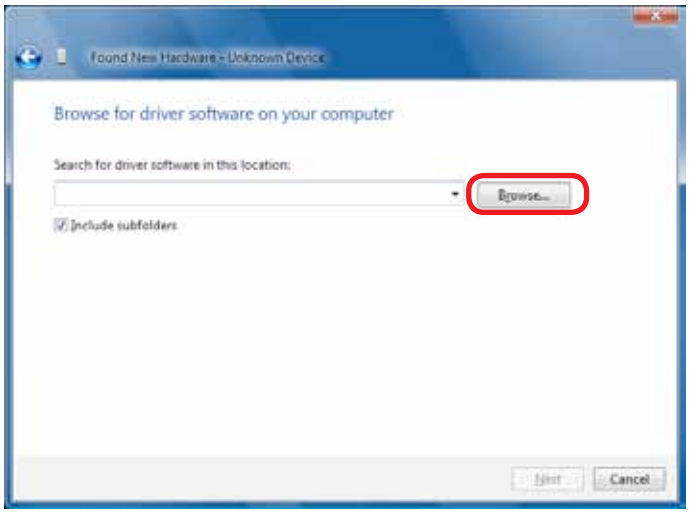
(1) Select Locate and install driver software (recommended)


Found New Hardware
Windows needs to install driver software for your Unknown Device
Locate and install driver software (recommended)
Windows will guide you through the process of installing driver software for your device.
Ask me again later
Windows will ask again the next time you plug in your device or log on.
Don't show this message again for this device
Your device will not function until you install driver software.
Cancel

(2) Select Browse my computer for driver software.


Found New Hardware - Unknown Device
Windows couldn't find driver software for your device
Check for a solution
Windows will check to see if there are steps you can take to get your device working.
Browse my computer for driver software (advanced)
Locate and install driver software manually.
Cancel

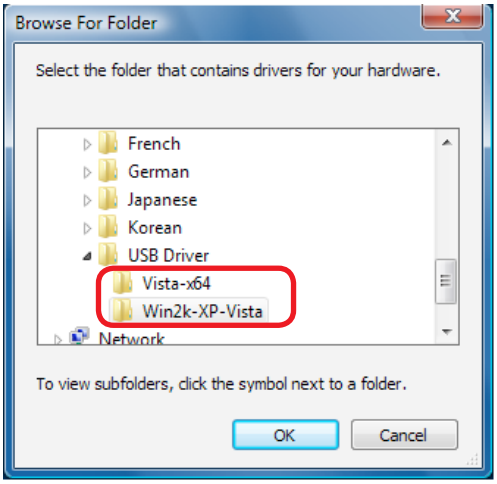
(3) Select Browse.



(4) In the Browse for folder dialog box, select the following from the drive containing the CD-ROM.

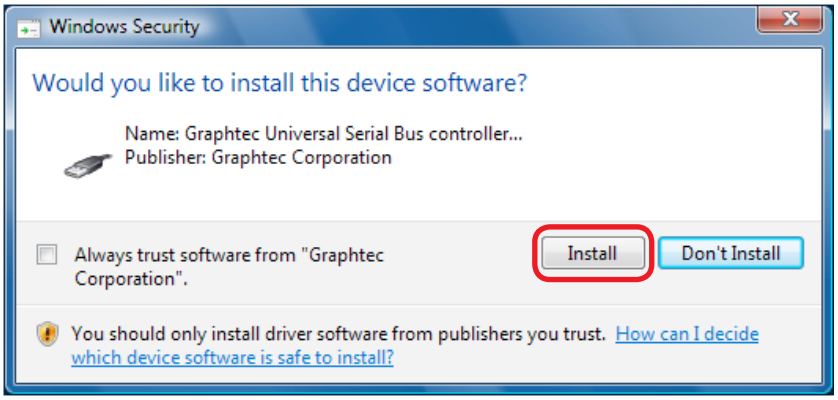
32-bit operating system: USB Driver → Win2K-XP-Vista

64-bit operating system: USB Driver → Vista-x64

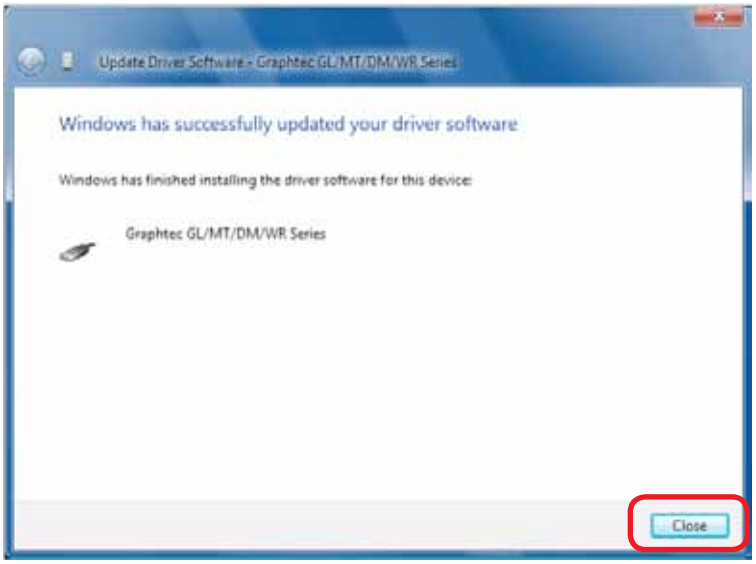


* For checking the number of bits of Windows Vista, see page 8.

(5) When the following dialog box appears, select Install.


Windows Security
Would you like to install this device software?
Name: Graphtec Universal Serial Bus controller...
Publisher: Graphtec Corporation
Always trust software from "Graphtec Corporation".
Install
Don't Install
You should only install driver software from publishers you trust. How can I decide which device software is safe to install?

(6) As the installation is completed after a while, press Close to exit.

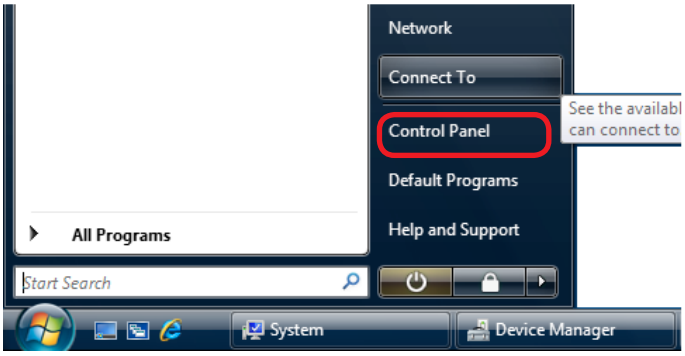

Update Driver Software - Graphtec GL/MT/DM/WR Series
Windows has successfully updated your driver software
Windows has finished installing the driver software for this device:
Graphtec GL/MT/DM/WR Series
Close

You have now completed the installation of the USB driver.

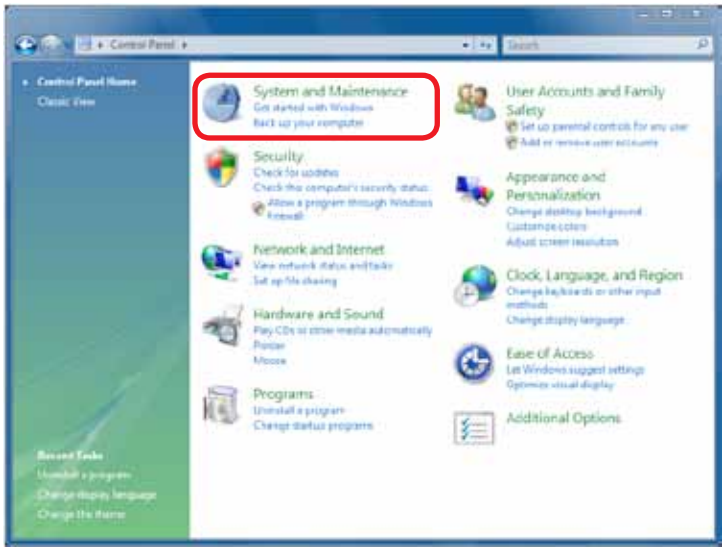
3-2-3 Windows Vista: Driver software is already installed.

Updating the USB driver

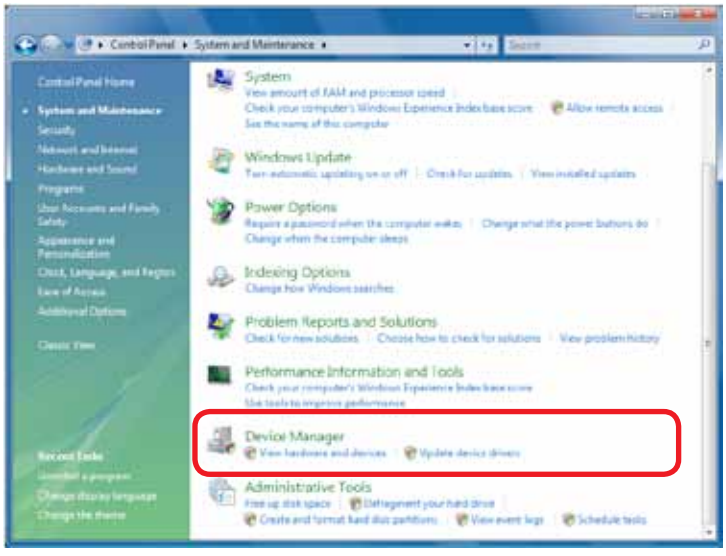
(1) Select Control Panel from the Start Menu.



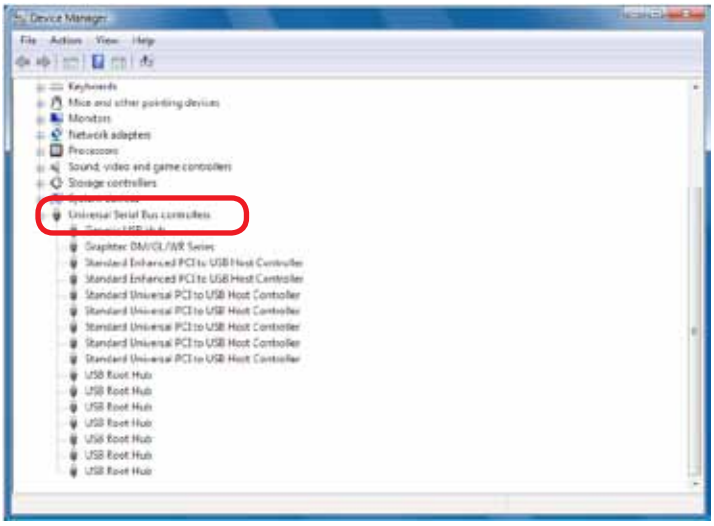
(2) Select System and Maintenance.



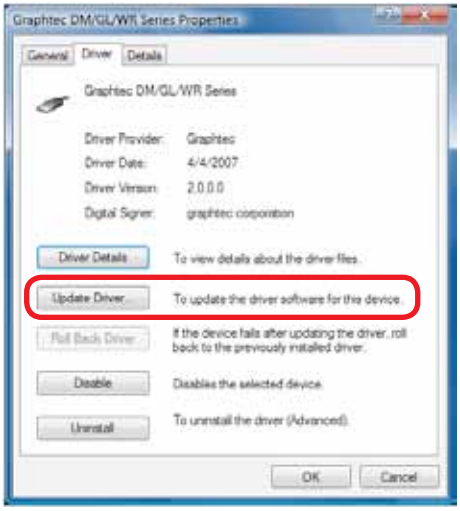
(3) Select View hardware and devices from Device Manager.



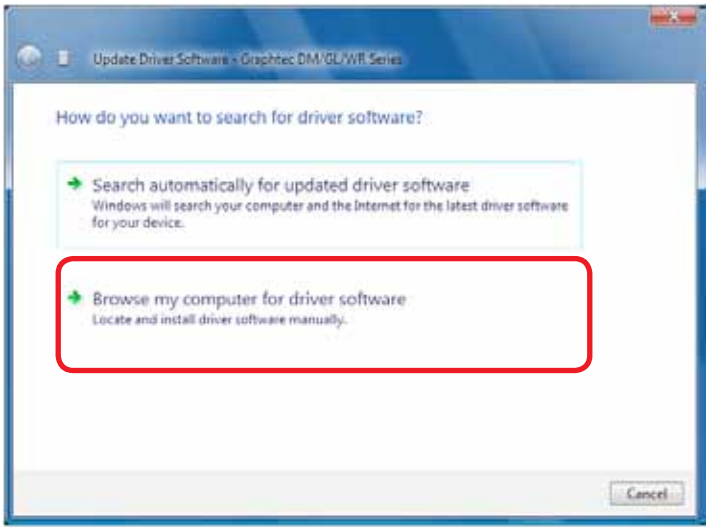
(4) Double-click Graphtec DM/GL/WR Series.



(5) Click the Driver tab and select Update Driver.



(6) Select Browse my computer for driver software.


Update Driver Software - Graphtec DM/GL/WR Series
How do you want to search for driver software?
Search automatically for updated driver software
Windows will search your computer and the Internet for the latest driver software for your device.
Browse my computer for driver software
Locate and install driver software manually.
Cancel

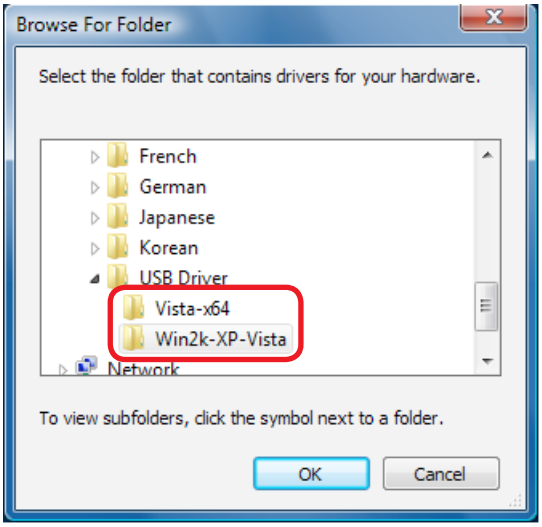
(7) Select Browse.

Update Driver Software - Graphtec DM/GL/WR Series
Browse for driver software on your computer
Search for driver software in this location:
Browse...
Include subfolders
Let me pick from a list of device drivers on my computer
This list will show installed driver software compatible with the device, and all driver software in the same category as the device.
Next
Cancel

(8) In the Browse for folder dialog box, select the following from the drive containing the CD-ROM.

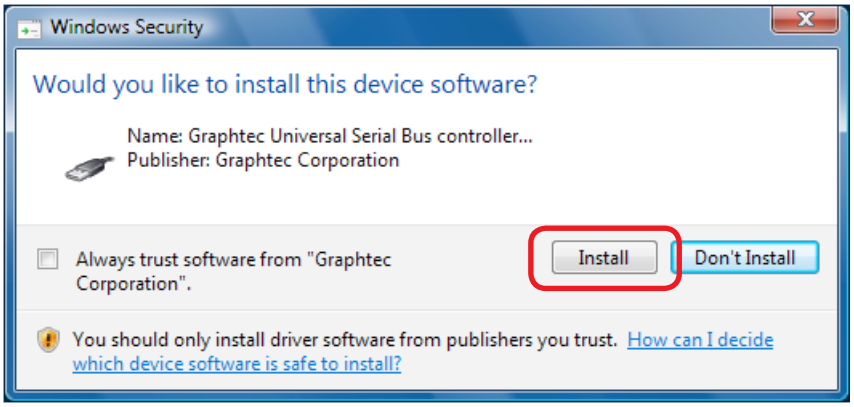
32-bit operating system: USB Driver → Win2K-XP-Vista

64-bit operating system: USB Driver → Vista-x64

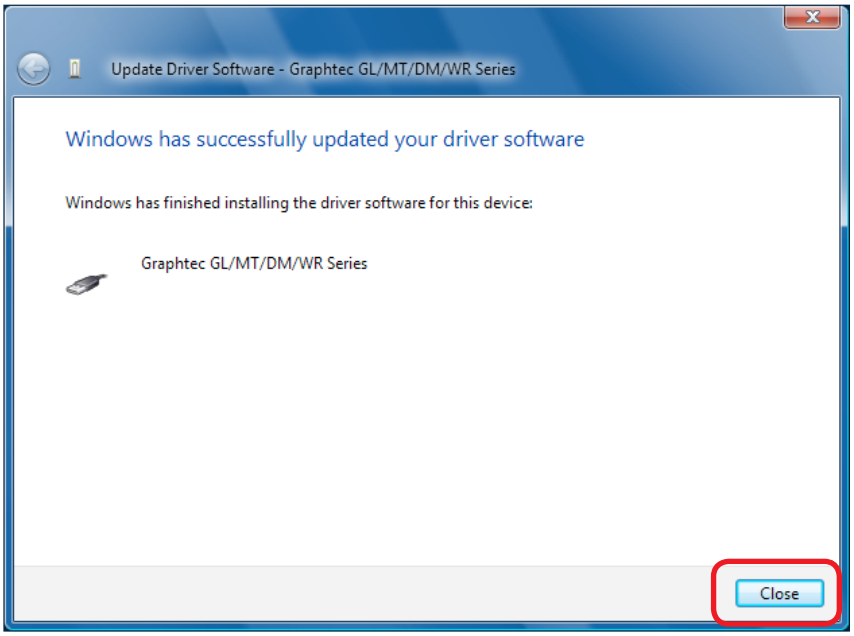


* For checking the number of bits of Windows Vista, see page 8.

(9) When the following dialog box appears, select Install.


Windows Security
Would you like to install this device software?
Name: Graphtec Universal Serial Bus controller...
Publisher: Graphtec Corporation
Always trust software from "Graphtec Corporation".
Install
Don't Install
You should only install driver software from publishers you trust. How can I decide which device software is safe to install?

(10) As the installation is completed after a while, press Close to exit.


Update Driver Software - Graphtec GL/MT/DM/WR Series
Windows has successfully updated your driver software
Windows has finished installing the driver software for this device:
Graphtec GL/MT/DM/WR Series
Close

You have now completed the updating of the USB driver.

3-2-4 Windows XP: Driver software is to be installed for the first time.

Installing the USB driver

(1) Detecting the hardware
Connect the USB cable to the PC and MT100. The "Found New Hardware" message appears.

(2) Starting the wizard
In the "Found New Hardware Wizard" window, select "Install from a list or specific location (Advanced)" under "What do you want the wizard to do?" and click "Next".

(3) In the "Please choose your search and installation options." window, select "Don't search. I will choose the driver to install." and click "Next".

(4) In the "Select the device driver you want to install for this hardware." window, click "Have Disk".

(5) In the "Install from Disk" window, browse the CD-ROM under "Copy manufacturer's files from", select "USB DRIVER" → "Win2k-XP-Vista" → "GTCUSBR.INF" and click "OK".

(6) In the "Select the device driver...." window, "Graphtec GL/MT/DM/WR Series USB Driver" appears in the "Model" box. Select it and click "Next".

(7) Installing the driver
Windows XP starts installing the driver. Depending on the OS settings, the following error message may be displayed: "The software you are installing for this hardware: MT100 has not passed Windows Logo testing to verify its compatibility with Windows XP." Click the "Continue" button to proceed with the installation.

(8) Completing installation
The "Completing the Found New Hardware Wizard" window appears. Click "Finish" to exit the wizard.

3-2-5 Windows XP: Driver software is already installed.

Updating the USB driver

(1) Opening "Device Manager"
Select "Control Panel" →"System" → "Hardware" tab or right-click "My Computer", select "Properties" → "Hardware" tab → "System Properties" window, then click the "Device Manager" button.

(2) In the "Device Manager" window, open "USB (Universal Serial Bus) Controller". Confirm that "Graphtec DM/GL/WR Series USB Driver" is shown. Right-click it and select "Properties".

(3) Updating the driver
Select the "Driver" tab and click "Update Driver".

(4) Starting the update wizard
The "Hardware Update Wizard" appears. Select "Install from a list or specific location (Advanced)" under "What do you want the wizard to do?" and click "Next".

(5) In the "Please choose your search and installation options." window, select "Don't search. I will choose the driver to install." and click "Next".

(6) In the "Select the device driver you want to install for this hardware." window, click "Have Disk".

(7) In the "Locate File" window, browse the CD-ROM, select "USB DRIVER" → "Win2k-XP-Vista"→ "GTCUSBR.INF" and click "Open".

(8) Return to the "Select the device driver" window and click "Next".

(9) Installing the driver
Windows XP starts installing the driver. Depending on the OS setting, "The software you are installing for this hardware: MT100 has not passed Windows Logo Testing to verify its compatibility with Windows XP" message may appear. Simply click "Continue Anyway".

(10) Completing the installation
The "Completing the Hardware Update Wizard" window appears. Click "Finish" to exit the wizard.

3-2-6 Windows 2000: Driver software is to be installed for the first time.

Installing the USB driver

(1) Starting the wizard
Connect the USB cable to the PC and the MT100. The "Found New Hardware" wizard appears.

(2) In the "Found New Hardware Wizard" window, select "Search for a suitable driver for my device (Recommended)" under "What do you want the wizard to do?" and click "Next".

(3) In the "Locate Driver File" window, select "CD-ROM drive" under "Optional search locations" and click "Next".

(4) Browse the CD-ROM, select "USB DRIVER" → "Win2k-XP-Vista" → "GTCUSBR.INF" and click "OK".

(5) "The wizard found a driver" message appears. Click "Next".

(6) Completing installation
The "Completing Found New Hardware Wizard" window appears. Click "Finish" to exit the wizard.

3-2-7 Windows 2000: Driver software is already installed.

Updating the USB driver

(1) Opening "Device Manager"
Select "Control Panel" → "System" → "Hardware" tab or right-click "My Computer", select "Properties" → "Hardware" tab → "System Properties" window, then click the "Device Manager" button.

(2) In the "Device Manager" window, open "USB (Universal Serial Bus) Controller". Confirm that "Graphtec DM/GL/WR Series USB Driver" is shown. Right-click it and select "Properties".

(3) Updating the driver
Select the "Driver" tab and click "Update Driver".

(4) Starting the update wizard
"Upgrade Device Driver Wizard" appears. Click "Next".

(5) In the "Install Hardware Device Drivers" window, select "Display a list of the known drivers for this device so that I can choose a specific driver." under "What do you want the wizard to do?" and click "Next".

(6) In the "Select a Device Driver" window, click "Have Disk".

(7) In the "Locate File" window, browse the CD-ROM, select "USB DRIVER" → "Win2k-XP-Vista" → "GTCUSBR.INF" and click "OK".

(8) Return to the "Select a Device Driver" window and click "Next".

(9) In the "Start Device Driver Installation" window, click "Next".

(10) Completing installation
The "Completing the Upgrade Device Driver Wizard" window appears. Click "Finish" to exit the wizard.

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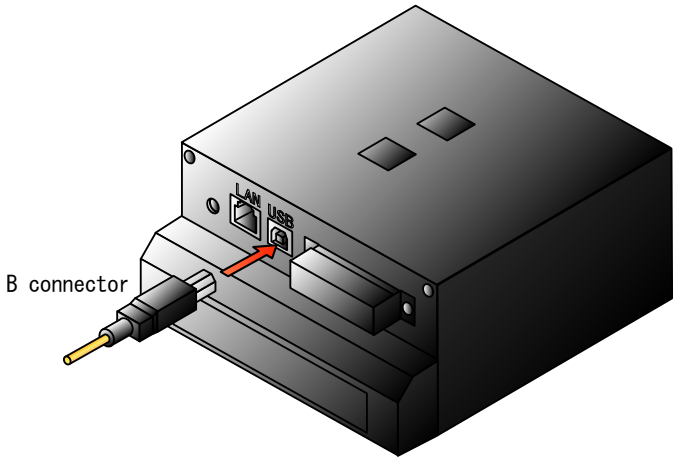
4. Connecting to a PC (Personal Computer)

4-1 Connecting via USB

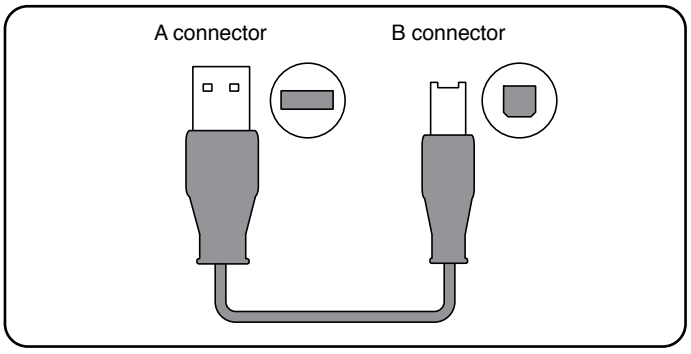
The MT100 is connected to a PC via a USB cable.



CHECKPOINT

When using a USB cable, a USB driver must be installed in the PC.
Please see Section 3, "Installing the USB Driver" for the installation procedure.
LAN connector. Make sure the cable is inserted into the correct connector.

● Use an A-B type USB cable to connect the MT100 to a PC.



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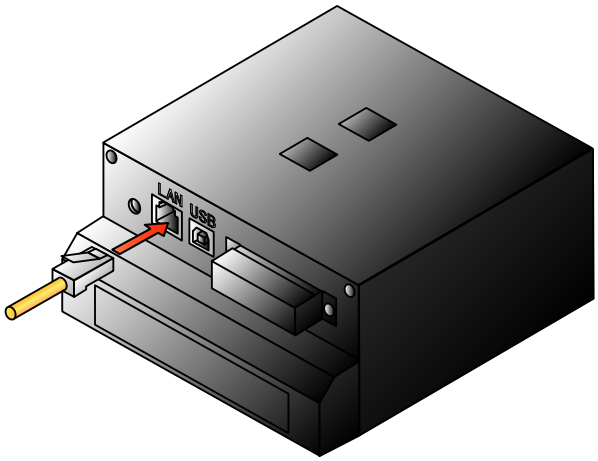
4-2 Connecting via LAN

It can also be connected via a LAN cable.

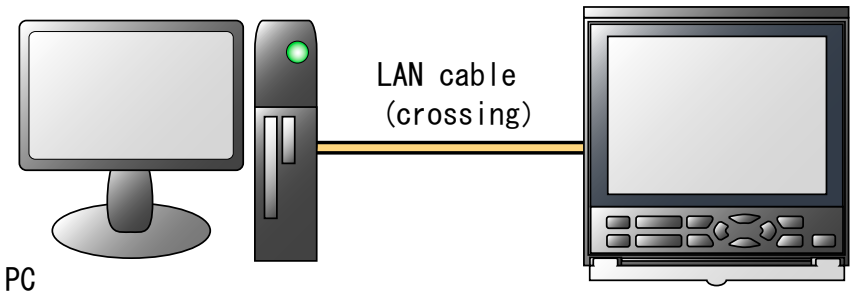


CHECKPOINT

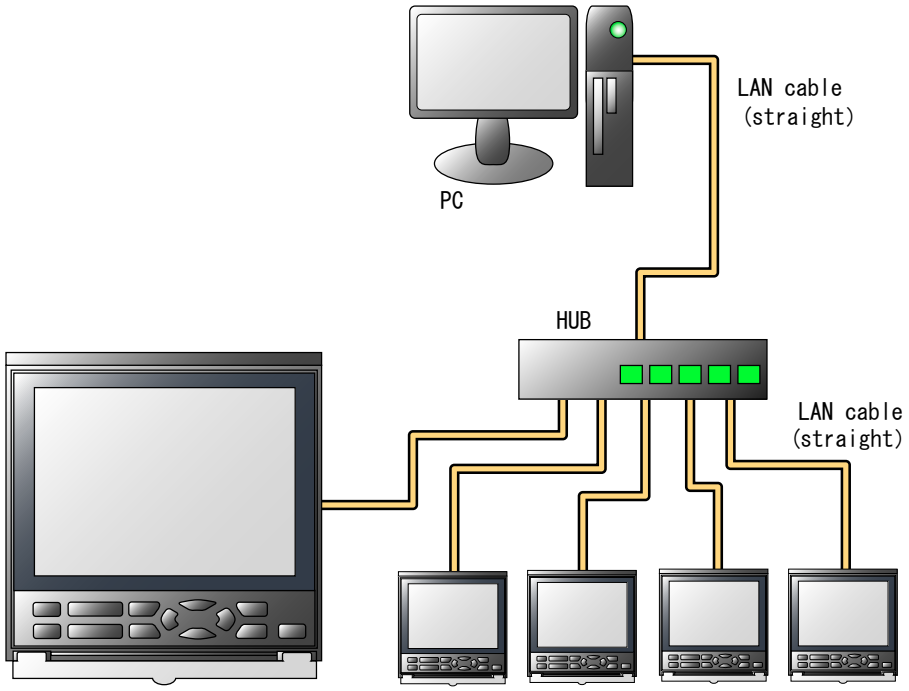
Depending on your usage, use one of the following types of LAN cables.

● LAN Cable Types

- Use a crossing cable when connecting directly to a PC, without using a hub.



- Use a straight cable to connect to a PC through a hub.



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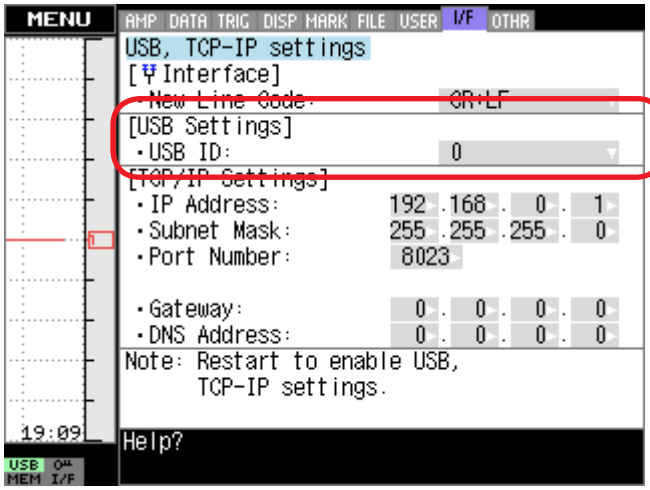
4-3 Setting IP Address or USB ID

To connect to a PC, configure the device's interface settings.

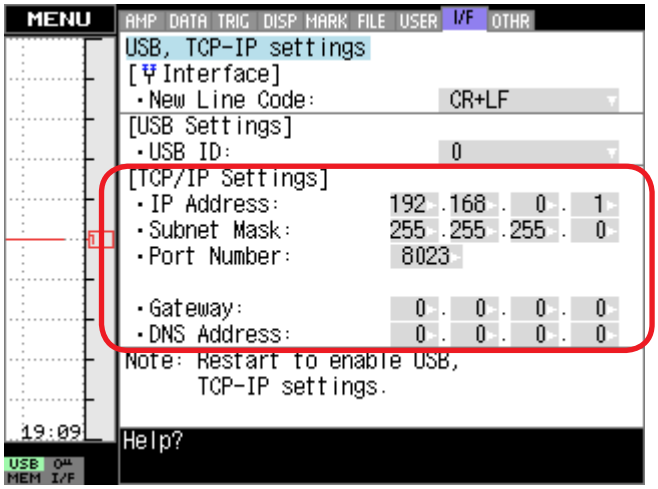
USB Settings

Press the "MENU" key seven times to open "I/F Settings".
Configure "USB ID Settings".
Power off and restart to make the settings take effect.



TCP-IP Settings

Press the "MENU" key seven times to open "I/F Settings".
Configure "TCP-IP Settings".
Set "IP Address", "Subnet Mask", "Port Number", "Gateway", and "DNS Address" .
Then power off and restart to make the settings take effect.



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Example of TCP-IP Settings

Connecting one PC and one MT100
Refer to the following settings if you are not connecting to a corporate LAN or other networks.
Connect MT100 to a PC with a crossover cable.

PC's IP Address	192. 168. 1. 1
MT100's IP Address	192. 168. 1. 2
IP Address of second and more MT100	192. 168. 1. 3 (increase the number replacing "3" with 4, 5, 6, and so on)

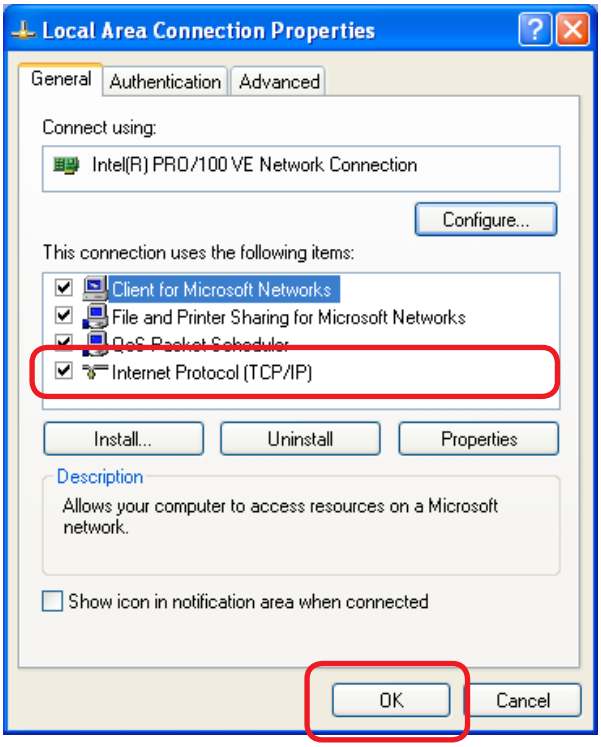
CHECKPOINT

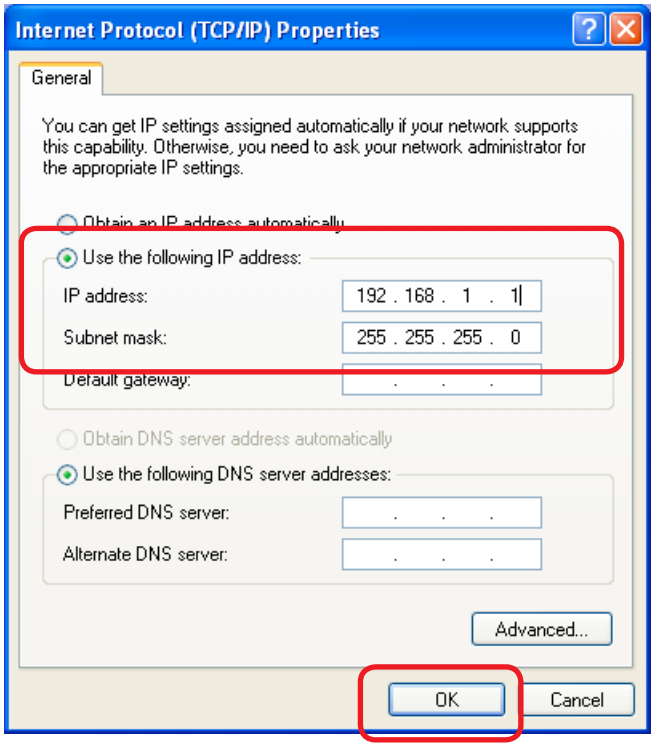
In this case, always set the subnet mask to "255.255.255.0".

In this case, always set the port number to "8023".

Setting PC's IP Address (Windows XP)

Select "Start" button → "Control Panel" → "Network Connections" → "Local Area Connection" → "Properties" → "Internet Protocol (TCP/IP)" → "Properties", click to select "Use the following IP address" check box, set "IP address" and "Subnet mask", and then click "OK".




Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Use the following IP address:
IP address:
192 . 168 . 1 . 1
Subnet mask:
255 . 255 . 255 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

5. Installing the MT100 Application Software

This chapter describes how to install the application software.

(1) Insert the User's Guide CD-ROM provided into the PC's CD-ROM drive.

(2) Click the Taskbar's Start button, and then click the Run... icon to open the "Run" window.

(3) Enter the CD-ROM drive name and \English\MT100-APS\Setup.exe as the name of the file you wish to open. If the disk is in drive D, for example, enter "D\English\MT100-APS\Setup.exe" in the box and then click "OK" to launch the installer.

(4) Follow the instructions on the screen to continue with the installation.

CHECKPOINT

Be sure to observe the following points when connecting the MT100 to a PC.

- *Do not connect any devices apart from a mouse or a keyboard to any of the other USB terminals on your PC.*
- *Set the PC's power-saving functions to Off.*
- *Set the Screen Saver to Off.*
- *Set the anti-virus software auto update and scan scheduler functions to Off. Also, set the Windows auto update and scheduler functions to Off.*

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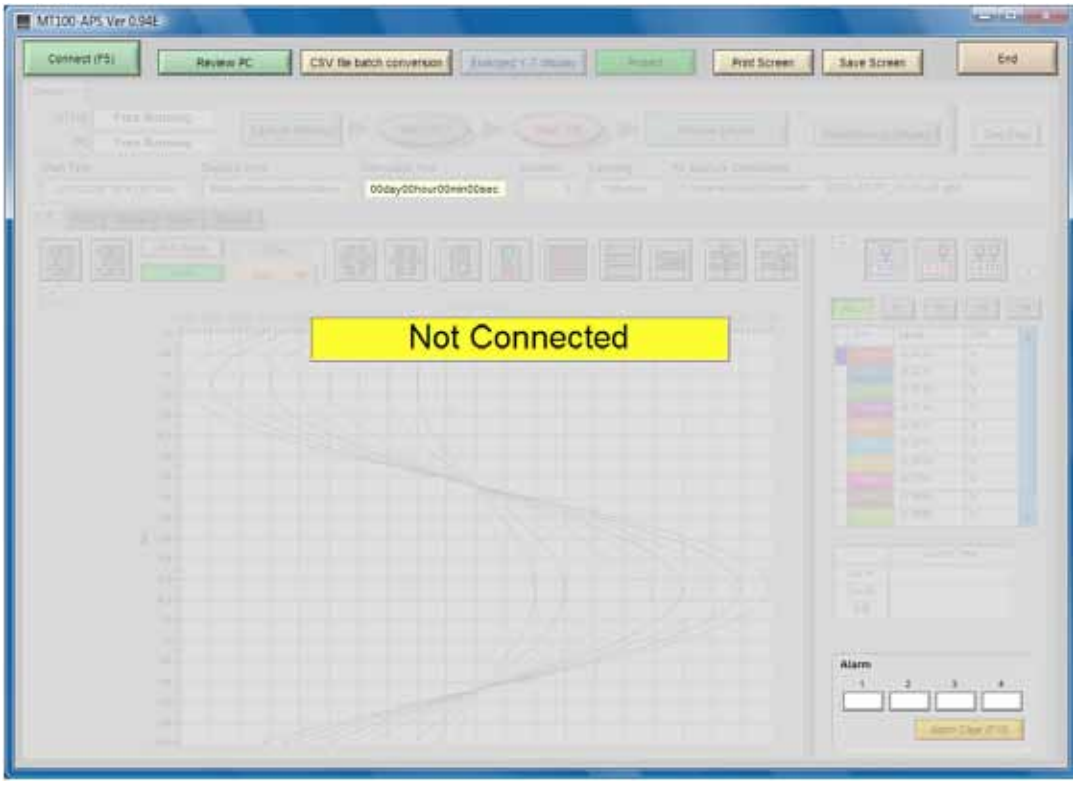
6. Launching the Software

Click the Taskbar's "Start" button → "Programs" → "MT100APS" → "MT100APS" to launch the application software.
Once the program has started up, the following screen is displayed.



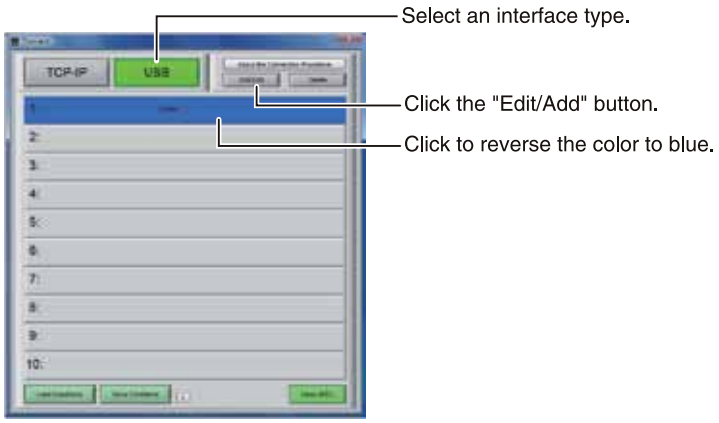
7. PC Connection Settings

Configure the communication settings between MT100 and a PC.

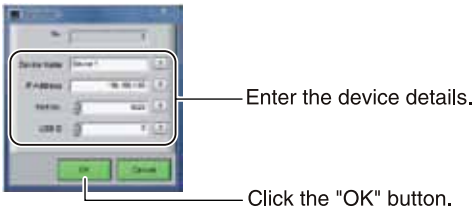
(1) Click the "Connect (F5)" button on the main menu to display the Connect screen.

(2) Select the interface to connect.

(3) Click row "1:" to reverse the display color to blue, and then click the "Edit/Add" button.

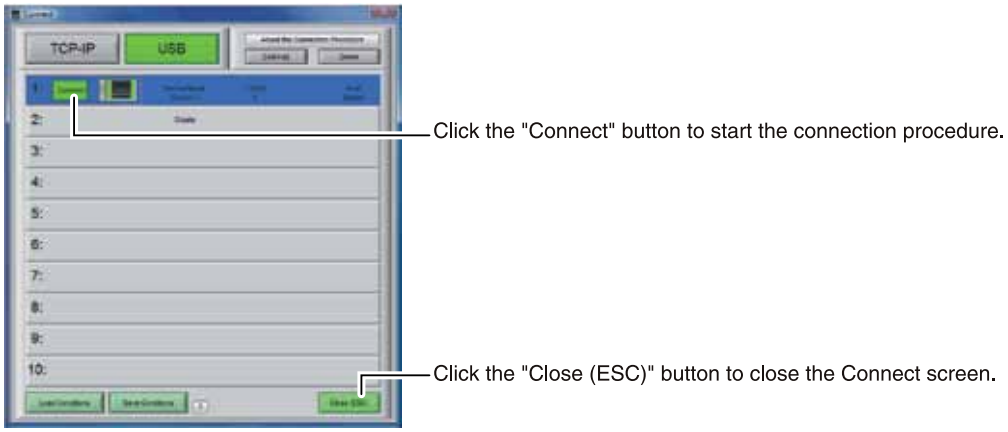


(4) Enter "Device Name", "IP Address", "Port Number", and "USB ID", and then click "OK".



(5) Click the "Connect" button to perform the connection to enable communication between the devices.

(6) Click the "Close (ESC)" button to close the Connect screen.

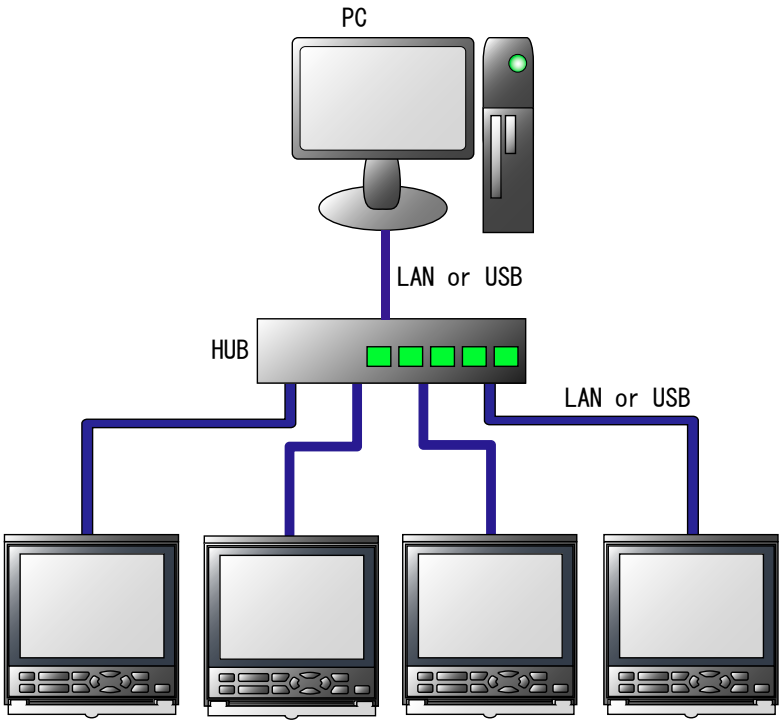

TCP-IP
USB
Click the "Connect" button to start the connection procedure.
Click the "Close (ESC)" button to close the Connect screen.

Check:

When the PC is connected to the MT100, the software runs according to the settings loaded from the MT100.
To use the settings saved on the PC, press the "Load Conditions" button to load a preserved setup file.
Note, however, that you must have setup conditions saved in advance.

Connecting multiple MT100s

MT100APS can connect up to 10 MT100s (maximum of 100 channels).
This section describes how to connect multiple devices.



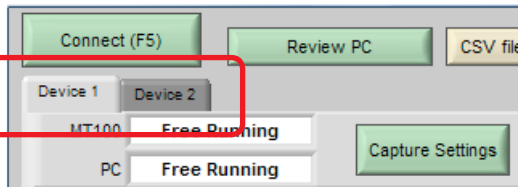
(1) On each device, register "IP Address" or "USB ID".

Note: Register one number for each device to avoid duplicates.

(2) On each device, click the "Connect" button to perform the connection.

(3) Click the "Close (ESC)" button to close the Connect screen.

(4) The connected tabs are displayed. Select each device to make desired settings.



Check:

Setup conditions are saved and loaded for each device. Click an entry field of 1 to 10, then save or load the setup conditions for the device inverted in blue in the selected field. Setup conditions can be neither saved or loaded collectively for all the devices.

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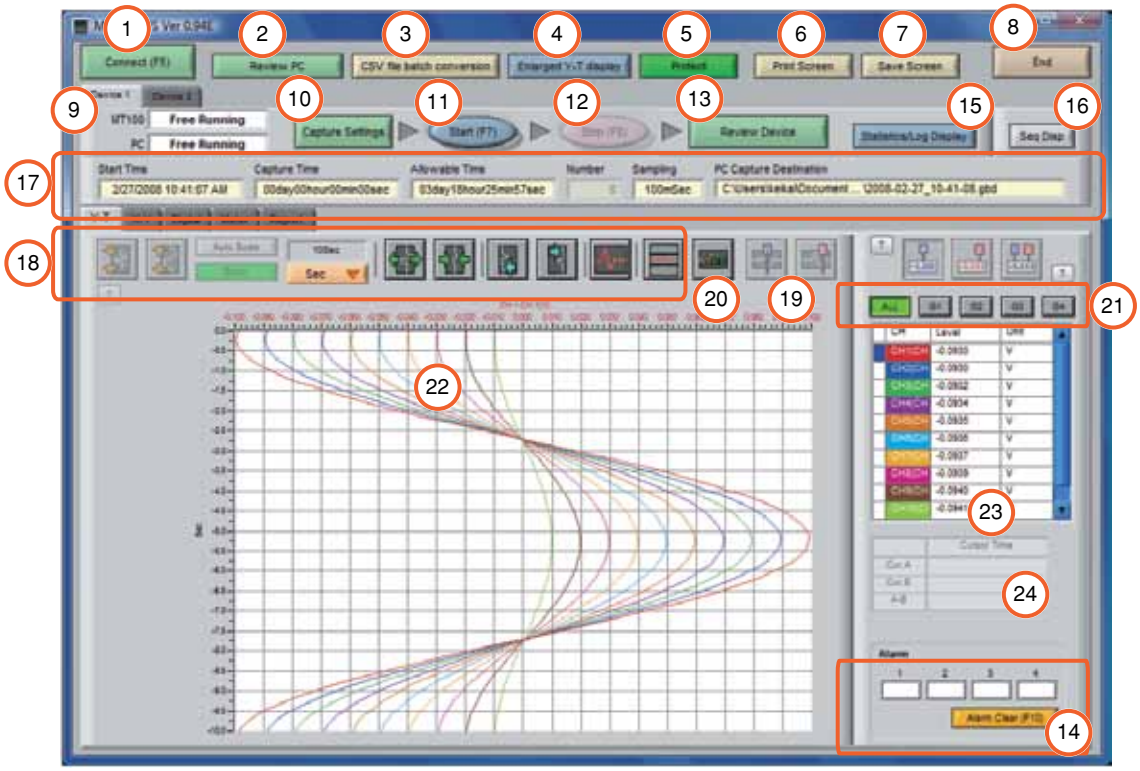
8. Display Screens

This chapter describes the various screens used in this software.

8-1 Y-T (Main Screen)



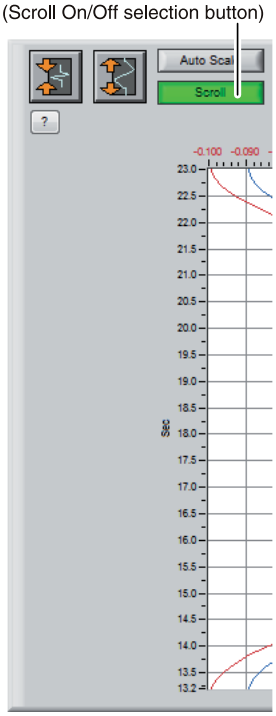
No.	Name	Description	Ref. Section
①	Connect (F5)	Click this button to open the Connect screen.	7
②	Review PC	Click this button to replay the data captured to the PC (personal computer).	11-1
③	CSV file batch conversion	Click this button to convert multiple GBD (binary data) files captured to the PC to CSV files.	12-1
④	Enlarged Y-T display	Click this button to enlarge the waveform area in Y-T display screen.	8-2
⑤	Protect	Click this button to set the password to protect the software.	12-3
⑥	Print Screen	Click this button to print out a copy of the screen. Printing is performed at the printer that has been selected as the default printer. If you change the printer, relaunch the software.	
⑦	Save Screen	Click this button to save the displayed screen as a BMP file.	
⑧	End	Click this button to exit the application.	12-4
⑨	Simplified message area	The operating status of the MT100 and PC is displayed here. Free Running: Stopped status (not capturing data) Armed: Awaiting trigger activation; data has not been captured. Recording...: Data capture status Capture Ended: Data captured has ended. Click the "Stop" key.	
⑩	Capture Settings	Click this button to open the data capture settings screen.	9
⑪	Start (F7)	Click this button to start data capture.	8-7
⑫	Stop (F8)	Click this button to stop data capture.	8-7
⑬	Review Device	Click this button to replay the data captured to the device.	11-2
⑭	Alarm	Click this button to display the alarm output port status. If "Alarm Hold" has been selected, the alarm can be cleared by clicking the "Alarm Clear" button.	11-3-4
⑮	Statistics/Log Display	Click this button to display the results of statistical calculation performed during data capture, and a log of the alarms generated.	12-2

No.	Name	Description	Ref. Section
⑯	Seq Disp	Pressing this button automatically switches the screen periodically if two or more MT100 units have been connected. The button is enabled with two or more MT100 units connected. The screen is switched at fixed intervals of about 2 seconds.	
⑰	Capture Infomation	Pressing this button automatically switches the screen periodically if two or more MT100 units have been connected. The button is enabled with two or more MT100 units connected. The screen is switched at fixed intervals of about 2 seconds.	
⑱	Waveform Op.	Click this button to perform various settings for the waveform display.	10
⑲	Cursors	Click these buttons to display the cursors during a data capture operation when the device is in the Scroll Off status.	10
⑳	Mark	The message shown on the button can be displayed on the waveform screen. The mark is captured along with the data. Register the message from Record Settings and then Mark Settings.	10
㉑	Switch displayed groups	Click one of these buttons to select a group whose waveform and digital values are displayed.	
㉒	Waveform Graph	The waveforms are displayed here.	
㉓	Digital	The digital values are displayed in this area. Clicking on any of the CH numbers enables the waveform for that channel to be hidden/displayed. The channels for which an alarm has been generated are shown in red.	
㉔	Cursor Time	The cursor times are displayed during data capture when Scroll Off has been selected.	

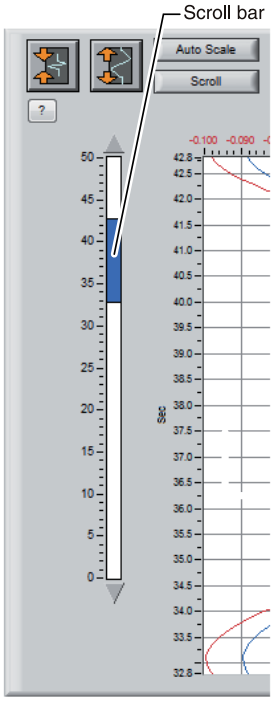
The "Scroll" button is displayed on the Y-T screen during data capture. Use the "Scroll" button's On/Off functions to display current data and past data.
When Scroll On has been selected, the waveform graph is scrolled so that the data at the right edge is the newest data.
When Scroll Off has been selected, the scrolling operation is halted and data that was captured in the past can be viewed on the scroll bar.

Scroll On

Scroll (Scroll On/Off selection button)

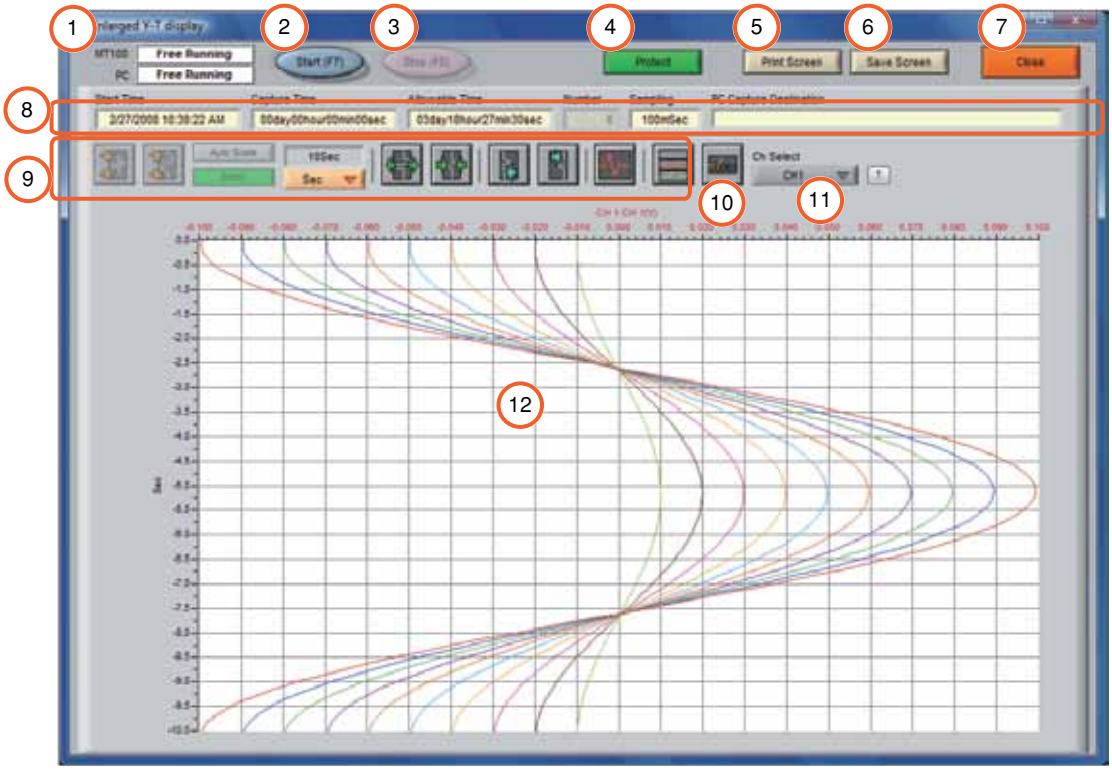


Scroll Off



8-2 Enlarged Y-T Display

You can press Enlarged Y-T display button to enlarge Y-T waveform display area.



No.	Name	Description	Ref. Section
①	Simplified message area	The operating status is displayed here.	
②	Start (F7)	Click this button to start data capture.	
③	Stop (F8)	Click this button to stop data capture.	
④	Protect	Click this button to set the password to protect the software.	12-3
⑤	Print Screen	Click this button to print out a copy of the displayed screen. Printing is performed at the printer that has been selected as "the default printer". Relaunch the software after you change the printer.	
⑥	Save Screen	Click this button to save the displayed screen as a BMP file.	
⑦	Close	Click this button to go back to the regular screen.	
⑧	Capture Information	Information is displayed here during a data capture operation.	
⑨	Waveform Op.	Click one of these buttons to perform various settings for the waveform display.	10
⑩	Mark	The message shown on the button can be displayed on the waveform screen.	10
⑪	CH Select	Select the channel to perform waveform operation.	10
⑫	Waveform Graph	The waveforms are displayed here.	

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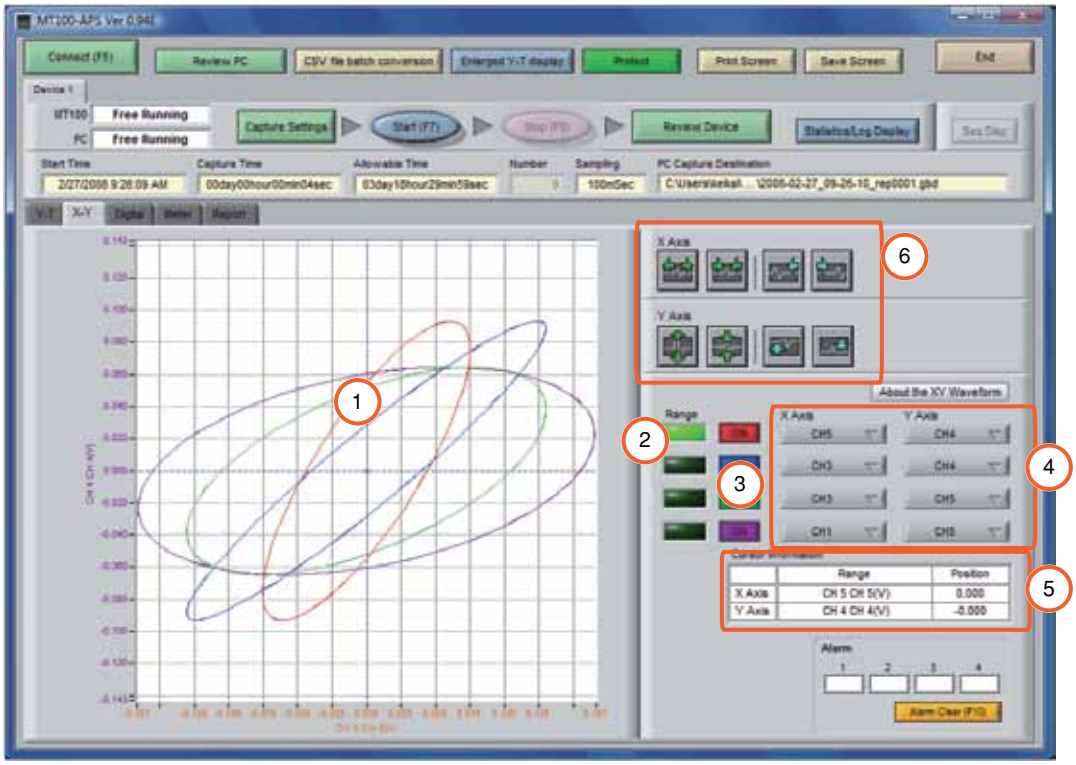
8-3 X-Y

Up to four combinations can be handled, and the X-Y channels can be specified freely.



No.	Name	Description	Ref. Section
①	X-Y Waveform Graph	The X-Y waveforms are displayed here.	
②	Range	These buttons specify display of the scale values for the channels selected for the X and Y axes.	
③	ON/OFF	Click these buttons to specify the display as ON or OFF.	
④	X Axis/Y Axis Channel Settings	Use these buttons to select the channels for the X and Y axes.	
⑤	Cursor Information	The cursor levels of the channels for which Range has been specified are shown here.	
⑥	Waveform Op.	Use these buttons to expand, shrink, or move X and Y axes.	

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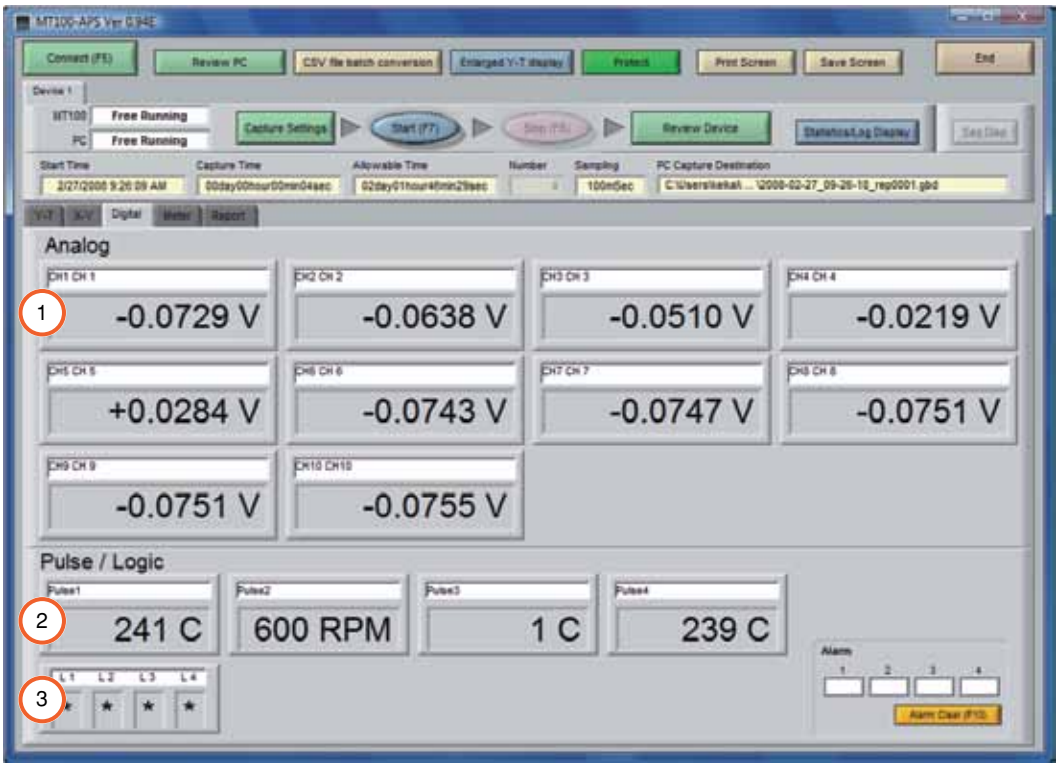
8-4 Digital

The captured data is displayed as digital values. Instantaneous values are displayed in large characters to enable easy confirmation.



No.	Name	Description	Ref. Section
①	Analog	Digital values are displayed here.	
②	Pulse	Pulse signals' digital values are displayed here.	
③	Logic	Logic signals' digital values are displayed here.	

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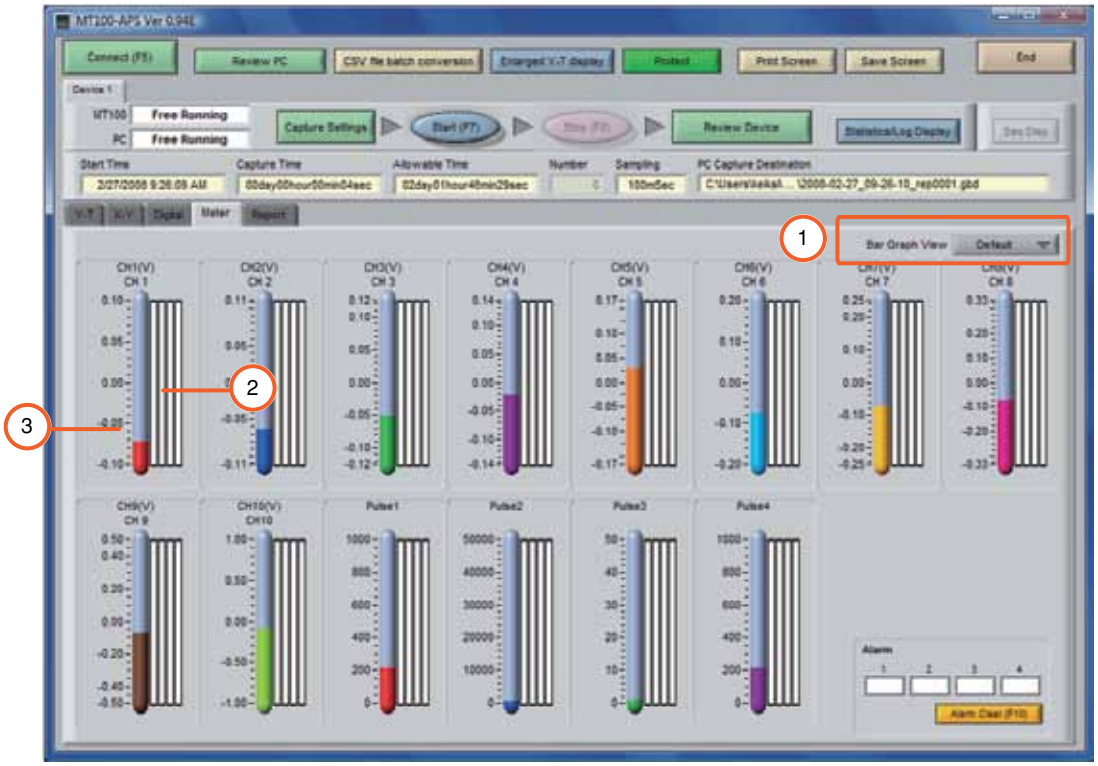
8-5 Meter

The inputs for each channel are displayed in a meter format.



No.	Name	Description	Ref. Section
①	Bar Graph Settings	This section allows you to select the display method of bar graphs. • Standard : Displays the bar graph with the reference point set to the bottom of the bar. • Center : Displays the bar graph with the reference point set to the center of the bar.	
②	Alarm Range	The alarm range is indicated with the green line by the side of the graph. The indicator turns red upon occurrence of the alarm.	
③	Instantaneous Value Level	The input signal level is displayed. The bar is filled in red from the reference point set in ① to the current input value.	

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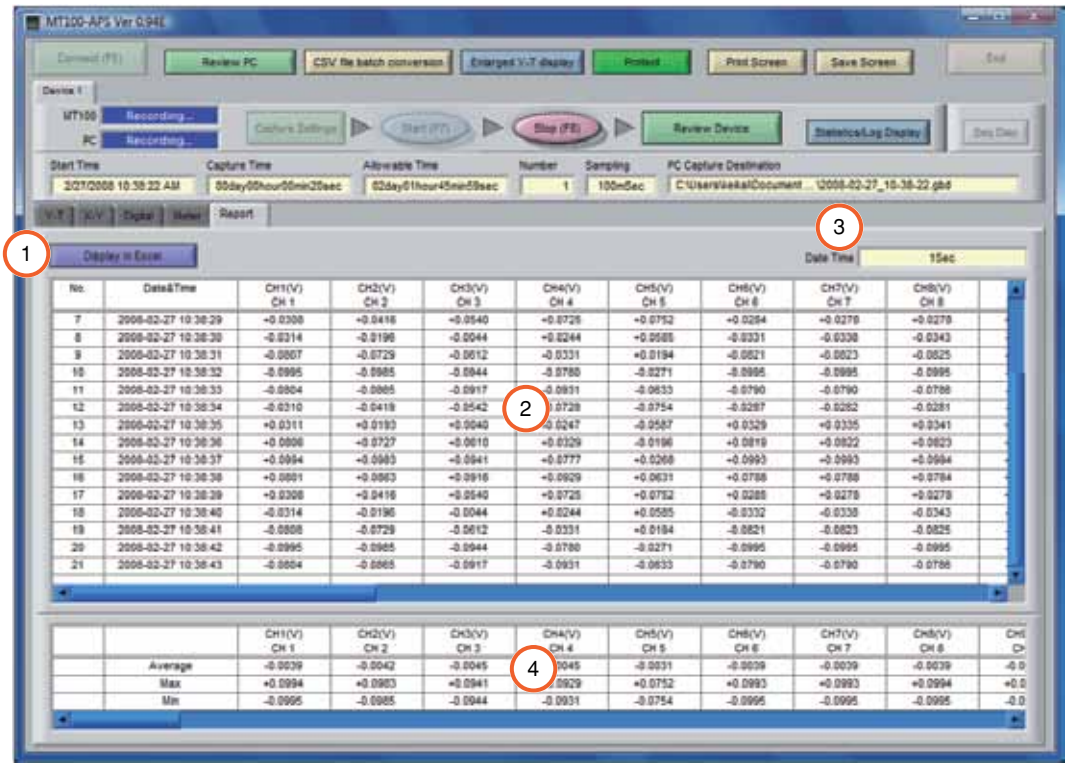
8-6 Report

The daily report data is displayed in this screen.
When the device is in the Free Running status, the data can be displayed in Excel format.
If Off has been specified for the Report setting, report data is not displayed.



No.	Name	Description	Ref. Section
①	Display in Excel	Click this button to display data captured so far in Excel format. Click this button to display data captured so far in Excel format.	
②	Daily report data	The daily report data is displayed here. If the number of points exceeds 100, data is deleted starting from the oldest data (the actual data is not affected).	
③	Daily Report Capture Interval	The daily report capture interval is displayed here.	
④	Calc. results	The calculated results for the average, maximum and minimum values are displayed here.	

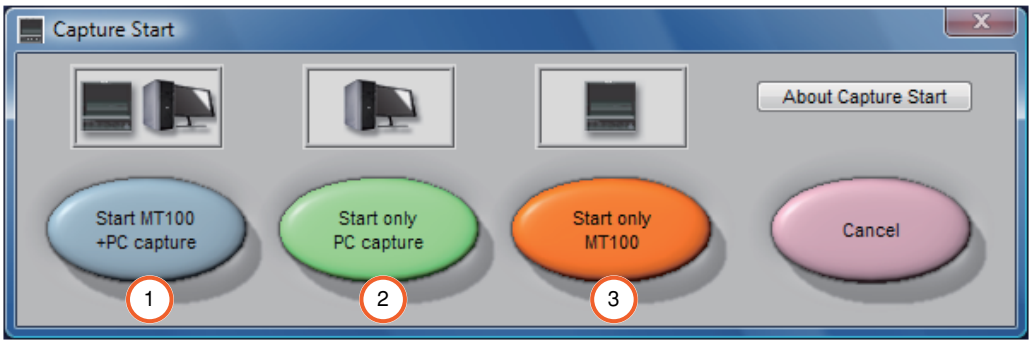
8-7 Starting and Stopping Capturing

● Starting capturing

Pressing the

button opens the Capture Start window.

Select the desired pattern for capturing.



① Start MT100+PC capture

This button causes both of the MT100 and PC to start capturing.
In pulse count mode, the count pulse value is cleared once.

CHECKPOINT

Capturing cannot be started with no free space at the MT100 capture destination.

② Start only PC capture

This button causes only the PC to start capturing.
If the MT100 has been capturing, the count pulse value is not cleared.
When the MT100 is free-running, the count pulse value is cleared.

CHECKPOINT

If only PC capturing is started with the MT100 free-running, the MT100 performs capture operation but does not capture actual data.

Data is not captured while capture operation is performed.

In this case, capturing can be started even with no free space at the MT100 capture destination.

③ Start only MT100

This button causes only the MT100 to start capturing.
The count pulse value is cleared.
You can cancel the connection after data capture starts.

CHECKPOINT

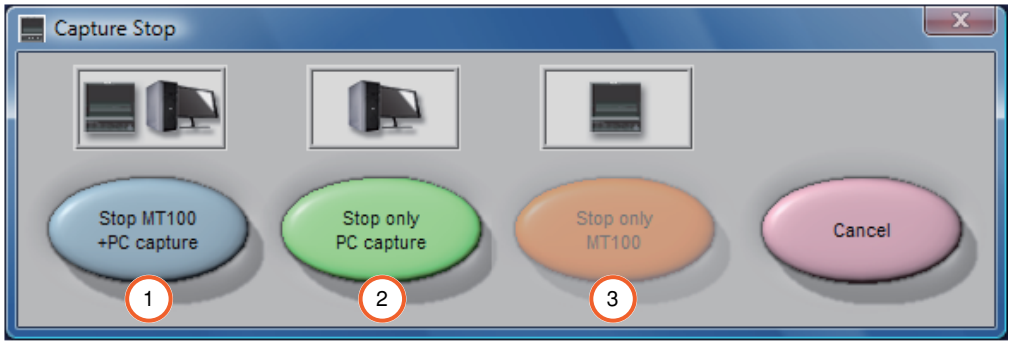
During capturing by the PC, the MT100 cannot start capturing alone.

● Stopping capturing

Pressing the

button opens the Capture Stop window.

Select the desired pattern to stop capturing



① Stop MT100+PC capture

This button causes both of the MT100 and PC to stop capturing.
The button is enabled only when both of the MT100 and PC are capturing.

② Stop only PC capture

This button causes only the PC to stop capturing.
The button is enabled only when both of the MT100 and PC are capturing or when only the PC is capturing.

③ Stop only MT100

This button causes the MT100 to stop capturing.
The button is enabled only when the MT100 is capturing alone.

9. Settings Screens

This chapter describes the screens used to perform settings related to data capture.

9-1 AMP Settings

This screen is used to make the analog input, logic input, and pulse input settings.

No.	Name	Description	Ref. Section
①	Settings tabs	These tabs are used to change the settings screen. AMP Settings: This tab is used to make input-related settings. Data Capture Settings: This tab used to make settings related to data capture. Trigger/Alarm Settings: This tab is used to make settings related to the trigger and alarm functions. Mark Set.: Set the user mark to be displayed and turn on/off the system indicators. Report Settings: This tab is used to make settings related to the daily report, monthly report, and Export to Direct Excel File functions Other Settings: This tab is used to make various other settings, to display information, and so forth.	
②	CH	These are the channel numbers for analog input.	
③	Color	The color used for the waveform for each channel can be specified here.	
④	Annotation	Each channel can be freely annotated (input the signal name, etc.). The annotation can be up to 11 (single-byte) characters long.	
⑤	Input	Select the input type for each channel. Off: No input is made to that channel. DC: Select DC to perform voltage measurement. TEMP: Select TEMP to perform temperature measurement. RH: Select RH to perform humidity measurement.	

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<table>
<tr><th>No.</th><th>Name</th><th>Description</th><th>Ref. Section</th></tr>
<tr><td>⑥</td><td>Range</td><td>These buttons are used to select the input range for each channel.<table><tr><td>DC</td><td>20, 50, 100, 200, 500 (mV), 1, 2, 5, 10, 20, 50 V, 1-5V</td></tr><tr><td>TEMP</td><td>TC-K, TC-J, TC-T, TC-R, TC-E, TC-B, TC-S,
TC-N, TC-W, Pt100, JPt100, Pt1000</td></tr><tr><td>RH</td><td>Fixed to 1 V; the unit is converted internally.
0V → 0%, 1V → 100%</td></tr></table></td><td></td></tr>
<tr><td>⑦</td><td>Filter</td><td>Use these buttons to set the filter for each channel. Moving average processing is used in the filter. It captures the data for configured number of times at the configured sampling rate and performs average processing.<table><tr><td>Off, 2, 5, 10, 20, 40 (times)</td></tr></table></td><td></td></tr>
<tr><td>⑧</td><td>Unit</td><td>The selected unit is displayed here.</td><td></td></tr>
<tr><td>⑨</td><td>Span</td><td>Use these buttons to set the upper limit and lower limit values for the waveforms displayed in the waveform graph.</td><td>9-1-1</td></tr>
<tr><td>⑩</td><td>Scaling</td><td>Use these buttons to convert the unit.</td><td>9-1-2</td></tr>
<tr><td>⑪</td><td>CH Group</td><td>Use these buttons to set the display group for each channel.
Only the groups set here can be viewed in Y-T display screen.</td><td></td></tr>
<tr><td>⑫</td><td>Calculate</td><td>Sets which calculation to perform between channels.
Four arithmetic operations can be selected.
Humidity can be calculated using dry bulb/wet bulb (CH2 only).
The calculation result is shown in the set channel display.</td><td>9-1-3</td></tr>
<tr><td>⑬</td><td>Graph Display</td><td>The waveforms for which settings have been made can be checked here.
Click the "Apply" button to apply the settings that have been made.</td><td></td></tr>
<tr><td>⑭</td><td>Logic/Pulse switching</td><td>Use this button to switch the digital input. Logic, Pulse, or OFF can be set here.</td><td></td></tr>
<tr><td>⑮</td><td>Logic CH number</td><td>The channel numbers for logic input.</td><td></td></tr>
<tr><td>⑯</td><td>Logic Line Color</td><td>Make the logic waveform color setting here.</td><td></td></tr>
<tr><td>⑰</td><td>Logic Filter</td><td>Make the logic filter setting here. The filter is about -3dB at about 30Hz.<table><tr><td>Off, On</td></tr></table></td><td></td></tr>
<tr><td>⑱</td><td>Pulse CH number</td><td>The channel numbers for pulse input.</td><td></td></tr>
<tr><td>⑲</td><td>Pulse Line Color</td><td>Make the pulse line color setting here.</td><td></td></tr>
<tr><td>⑳</td><td>Pulse Input</td><td>Use the Input button to select the pulse input type.<table><tr><td>Off</td><td>Pulse input is not made.</td></tr><tr><td>Revolutions</td><td>The number of pulses generated in one second is counted, multiplied by 60, and displayed as the number of revolutions (RPM).</td></tr><tr><td>Counts</td><td>A cumulative count is made of the number of pulses generated in one sample.</td></tr><tr><td>Inst.</td><td>The number of pulses generated in one sample is counted.</td></tr></table></td><td></td></tr>
<tr><td>㉑</td><td>Pulse Range</td><td>Use these buttons to set the pulse range.<table><tr><td>Revolutions</td><td>50, 500, 5000, 50k, 500k, 5M, 50M, 500M
PRM/F.S.</td></tr><tr><td>Counts</td><td>50, 500, 5000, 50k, 500k, 5M, 50M, 500M
C/F.S.</td></tr><tr><td>Inst.</td><td>50, 500, 5000, 50k, 500k, 5M, 50M, 500M
C/F.S.</td></tr></table></td><td></td></tr>
<tr><td>㉒</td><td>Pulse Filter</td><td>Make the pulse filter setting here. The filter is about -3dB at about 30Hz.<table><tr><td>Off, On</td></tr></table></td><td></td></tr>
<tr><td>㉓</td><td>Pulse Slope</td><td>Use this button to select the pulse detection slope.<table><tr><td>H</td><td>Rising signals are counted.</td></tr><tr><td>L</td><td>Falling signals are counted.</td></tr></table></td><td></td></tr>
<tr><td>㉔</td><td>Pulse Span</td><td>Use this button to set the upper limit and lower limit values for the waveforms displayed in the waveform graph.</td><td>9-1-1</td></tr>
<tr><td>㉕</td><td>Pulse Scaling</td><td>Use this button to convert the unit.</td><td>9-1-2</td></tr>
<tr><td>㉖</td><td>OK</td><td>Click this button to register your settings and close the screen.</td><td></td></tr>
<tr><td>㉗</td><td>Cancel</td><td>Click this button to close the screen without registering your settings.</td><td></td></tr>
<tr><td>㉘</td><td>Apply</td><td>Click this button to apply the settings made.</td><td></td></tr>
</table>

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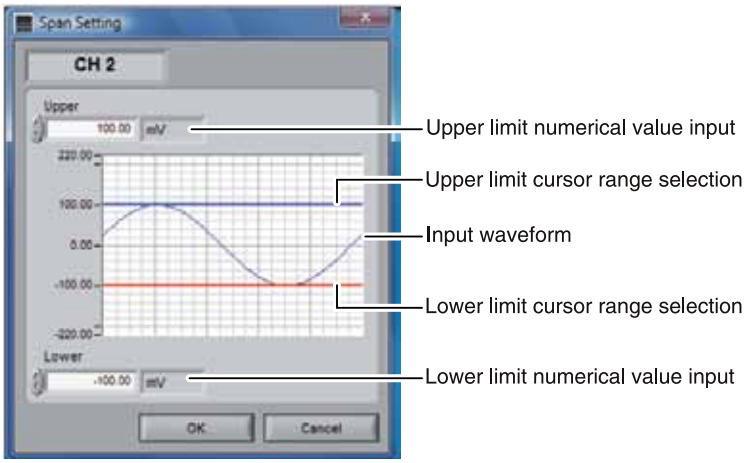
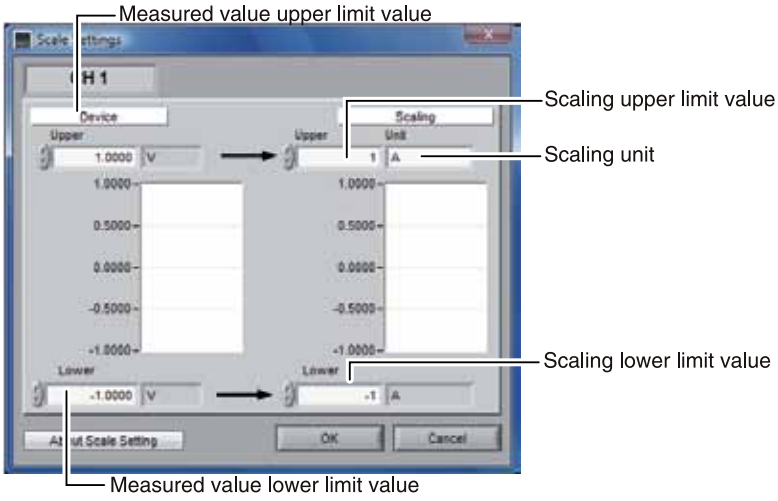
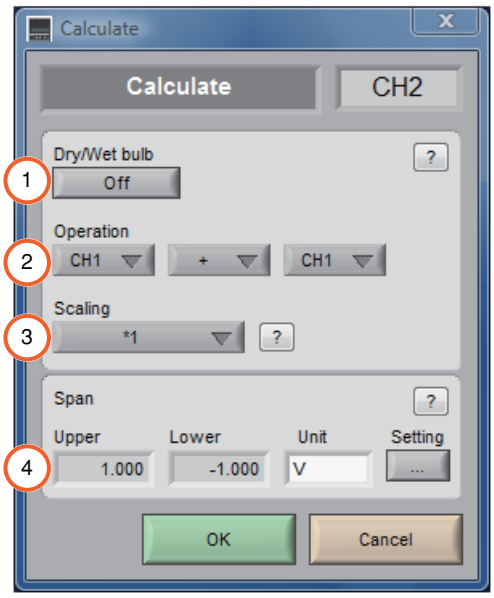
9-1-1 Span Settings



9-1-2 Scaling Settings



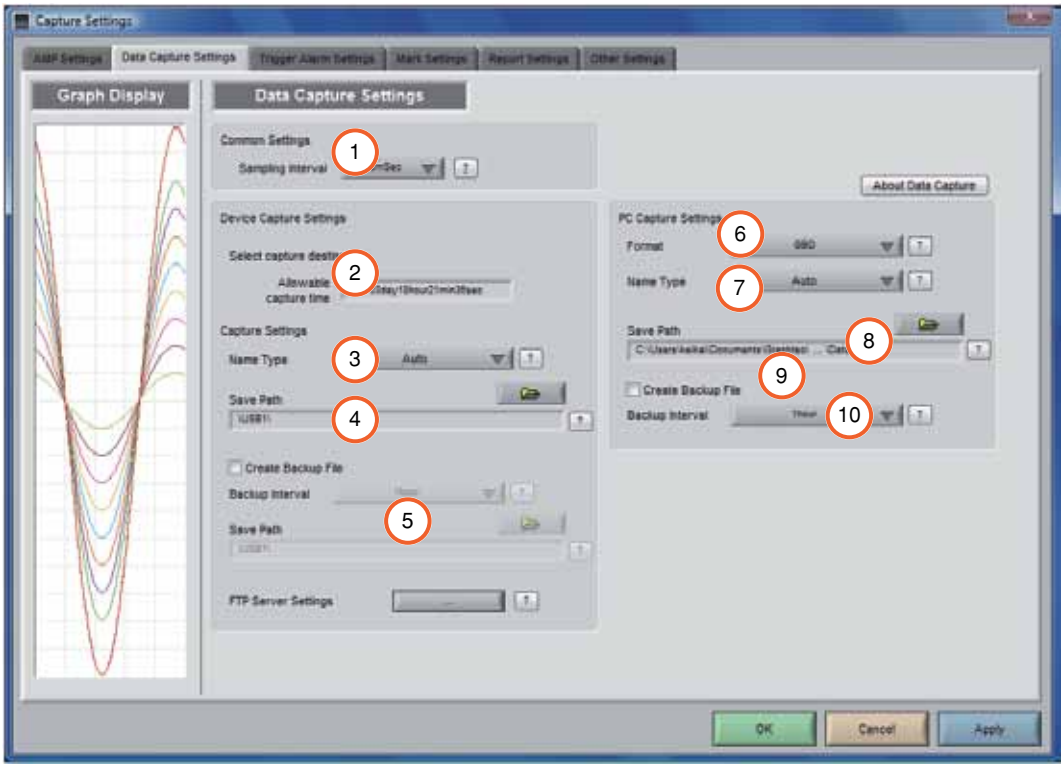
9-1-3 Operation Settings



No.	Name	Description	Ref. Section
①	DryWet bulb	Sets dry bulb/wet bulb conversion. (Selectable only for CH2) ON: Converts CH1 as dry-bulb temperature and CH2 as wet-bulb temperature to humidity. OFF: Does not perform dry bulb/wet bulb conversion.	
②	Operation	Sets the channel and operation expression for inter-CH operation. Four arithmetic operations (+, -, x, ÷) can be selected. * These items cannot be set when dry bulb/wet bulb conversion is on.	
③	Scaling	Set the scaling magnification to operation results. The settings selectable are /1000000, /1000, x1, x1000, and x1000000. <Examples> Operation result = 0.001 Operation result = 1000 x 1 = 0.001 x 1 = 1000 x 1000 = 1 /1000 = 1 x 1000000 = 1000 1000000 = 0.001 * This item cannot be set when dry bulb/wet bulb conversion is on.	
④	Span	Sets the calculation result unit and the span value for display. For CSV capturing, the span value cannot be reflected. When CSV data is replayed, it is displayed using the pre-operation span value. The unit for dry bulb/wet bulb conversion is fixed as %.	

9-2 Data Capture Settings

Settings such as the Sampling Interval, Device Capture Settings and PC Capture Settings are made at this screen.



No.	Name	Description	Ref. Section
①	Sampling Interval	Use this button to select the sampling interval. 100, 125, 200, 250, 500 (ms), 1, 2, 5, 10, 20, 30 (s), 1, 2, 5, 10, 20, 30 (min), 1 (h)	
②	Device Capture Settings Allowable capture time	The length of time available for data capture to the selected device storage medium (internal memory or USB device) is displayed here.	
③	Device Capture Settings Name Type	Use this button to select the method for appending the file name. Auto: Create a date folder in the specified folder, and then create a date and time file in it. User: The file name can be freely specified by the user.	
④	Device Capture Settings Save Path	The save destination at the device for the captured data is selected here.	9-2-1
⑤	Device Capture Settings Create Backup File	Check this option to create a backup file on the MT100. When creating a backup file, set the following items as well. Item: Description Backup Interval: Specify the backup interval. You can select 1, 2, 6, 12, or 24 hours. Save Path: Specify the destination to which to save the backup file. You can select USB or FTP. * USB cannot be selected when the capture destination is USB memory. FTP server setting: When the Save Path is FTP, specify the FTP server. For details about the setting, refer to the User's Manual on the CD.	
⑥	PC Capture Settings Format	Use this button to select the format of the data saved to the PC (personal computer). GBD: The data is saved as binary data. When compared with a CSV file, the file size is somewhat small. CSV: The data is saved as text data in a format that can be displayed in Excel. Please note that the maximum number of samples that can be displayed in Excel is 65535.	

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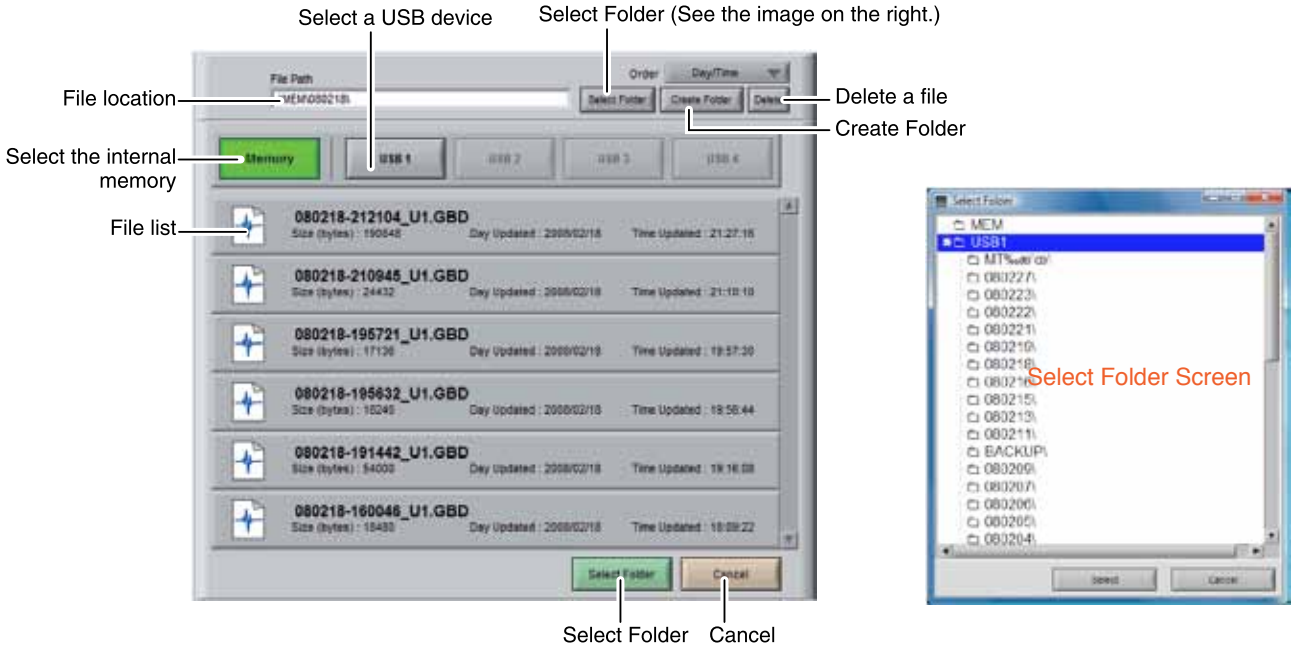
No.	Name	Description	Ref. Section
⑦	PC Capture Settings Name Type	Use this button to select the method for appending the file name. Auto: A folder with the date as the file name is created within the specified folder, and then a file with the date and time as the file name is created within the newly-created folder. User: The file name can be freely specified by the user.	
⑧	PC Capture Settings Save Path	The save destination at the PC (personal computer) for the captured data is selected here.	9-2-2
⑨	PC Capture Settings Create Backup File	To enable this function, click the checkbox to display the check mark. The backup file is created at the same location as that specified in Item 7 "Save Path" above. The "_bk" file extension is appended to the file name.	
⑩	PC Capture Settings Backup Interval	Use this button to select the backup interval. During data capture, a backup data file is created at the specified intervals. If all the backup files are linked, the data will be same as that of the original data. 1, 2, 6, 12, 24 (h)	

9-2-1 Device Capture Settings

This screen shows the settings for the Device save destination.



CAUTION!!

The MT100 cannot start capturing without free space in its internal memory or in USB memory.
If the device becomes full during data capture, the device stops capturing, but the PC continues capturing.
If "Repeat" is set to "ON" in Trigger Settings, after the device becomes full, the PC also stops capturing next time the Repeat starts.
When measuring for a long time, attach a USB memory to the device and set it as a destination for capturing.

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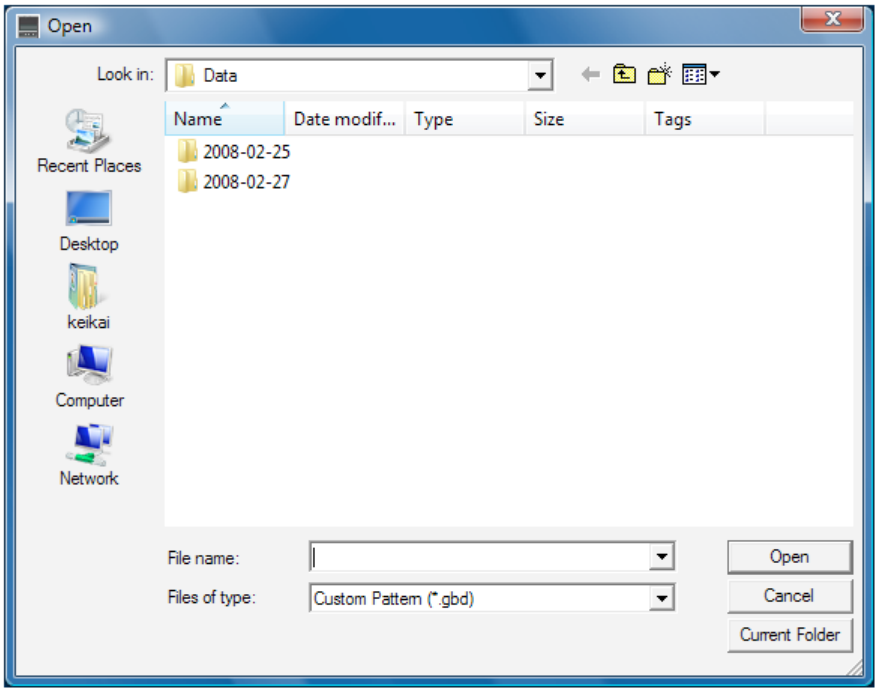
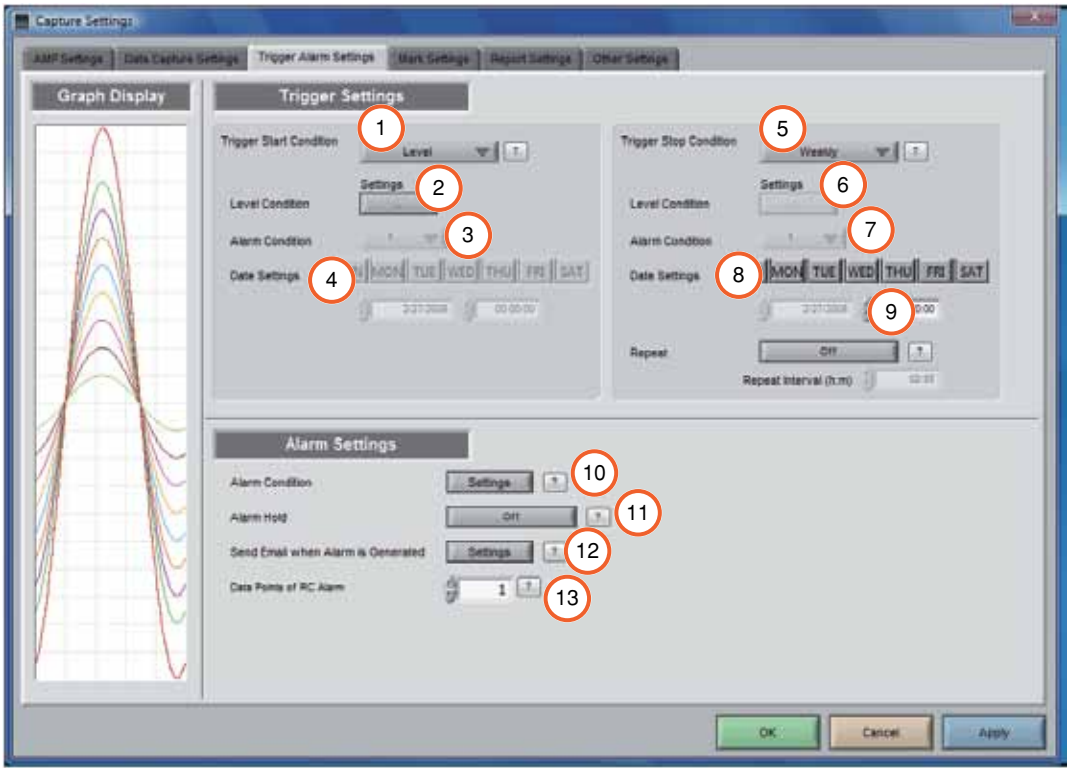
9-2-2 PC Capture Settings

Specify the save destination using the following Windows dialog box that appears.



9-3 Trigger/Alarm Settings

Settings such as the trigger start condition, stop condition, alarm settings, and those for sending email are made at this screen.



No.	Name	Description	Ref. Section
①	Trigger Start Condition	Use this button to select the trigger start condition. Off: There is no data capture start condition. Level: Data capture starts when the desired channel reaches the specified level value. Alarm: Data capture starts when the specified alarm occurs. Date: Data capture starts at the specified date and time. If you select "Date", set the date and time. Weekly: Data capture starts at the specified time on the specified day of the week. If you select "Weekly", set the day of week and time. External: Data capture starts with the external terminal signal. Data capture starts when the external trigger signal detects a falling of about 2.5V or less.	
②	Start side Level Condition	If "Level" has been selected for the start condition, make the required level settings here.	9-3-1
③	Start side Alarm Condition	If "Alarm" has been selected for the trigger start condition, set the alarm number here. Select an alarm number between 1 and 4.	
④	Start side Date Settings	If "Weekly or "Date" has been selected for the trigger start condition, make the required settings here. Date : Set the year, date, and time to start the data capture. Weekly : Set only the time and the day of week to start the data capture.	

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<table>
<tr><th>No.</th><th>Name</th><th>Description</th><th>Ref. Section</th></tr>
<tr><td>⑤</td><td>Trigger Stop Condition</td><td>This parameter specifies the condition for stopping data capture.<table>
<tr><td>Off</td><td>There is no data capture stop condition.</td></tr>
<tr><td>Level</td><td>Data capture stops when the desired channel reaches the specified level value.</td></tr>
<tr><td>Alarm</td><td>Data capture stops when the specified alarm occurs.</td></tr>
<tr><td>Date</td><td>Data capture stops at the specified date and time.
If you select "Date", set the date and time.</td></tr>
<tr><td>Weekly</td><td>Data capture stops at the specified time on the specified day of the week.
If you select "Weekly", set the day of week and time.</td></tr>
<tr><td>External</td><td>Data capture stops with the external terminal signal. Data capture stops when the external trigger signal detects a falling of about 2.5V or less.</td></tr>
<tr><td>Time</td><td>Data capture stops when data has been captured for the specified length of time.If "Time" has been selected, set the time for capturing.</td></tr>
</table></td><td></td></tr>
<tr><td>⑥</td><td>Stop side
Level Condition</td><td>If "Level" has been selected for the stop condition, make the required level settings here.</td><td>9-3-1</td></tr>
<tr><td>⑦</td><td>Stop side
Alarm Condition</td><td>If "Alarm" has been selected for the trigger stop condition, set the alarm number here.
Select an alarm number between 1 and 4.</td><td></td></tr>
<tr><td>⑧</td><td>Stop side
Date Settings</td><td>If "Date", "Weekly", or "Time" has been selected for the trigger stop condition, make the required settings here.
Date : Set the year, date, and time to stop the data capture.
Weekly : Set only the time and the day of week to start the data capture.
Time : Set the length of time between the start and the end of the data capture.</td><td></td></tr>
<tr><td>⑨</td><td>Repeat</td><td>Select ON to perform repeated capturing.
Sets repeat interval if repeated capturing is turned ON.
Repeat interval is the interval for starting measurement.
If capture time exceeds the repeat interval, the repeat interval is ignored and measurement starts immediately.</td><td></td></tr>
<tr><td>⑩</td><td>Alarm Condition</td><td>Use this button to make the alarm level settings for each input.</td><td>9-3-2</td></tr>
<tr><td>⑪</td><td>Alarm Hold</td><td>This parameter specifies whether to maintain or clear the alarm status.<table>
<tr><td>On</td><td>Once an alarm has been generated, the alarm status is maintained.
The alarm generated on each channel is retained together with the alarm output status. To clear the alarm status, click the "Alarm Clear" button displayed in the "Alarm Screen" described in Item 14 of Section 8-1, "Y-T".</td></tr>
<tr><td>Off</td><td>The alarm generated status is not maintained. If the alarm status is canceled, the alarm status and alarm output for each channel are canceled.</td></tr>
</table></td><td></td></tr>
<tr><td>⑫</td><td>Send Email when Alarm is Generated</td><td>Use this button to set the conditions for sending an email.
An email can be sent when an alarm has been generated.
(However, an email sending environment must be enabled.)</td><td>9-3-3</td></tr>
<tr><td>⑬</td><td>Data Points of RC Alarm</td><td>If you set RC for Alarm Settings, you must set the number of points to calculated the change.
An alarm is generated when the amount of alteration in data is equal to or greater than the specified value, after the number of specified samples have elapsed.</td><td></td></tr>
</table>

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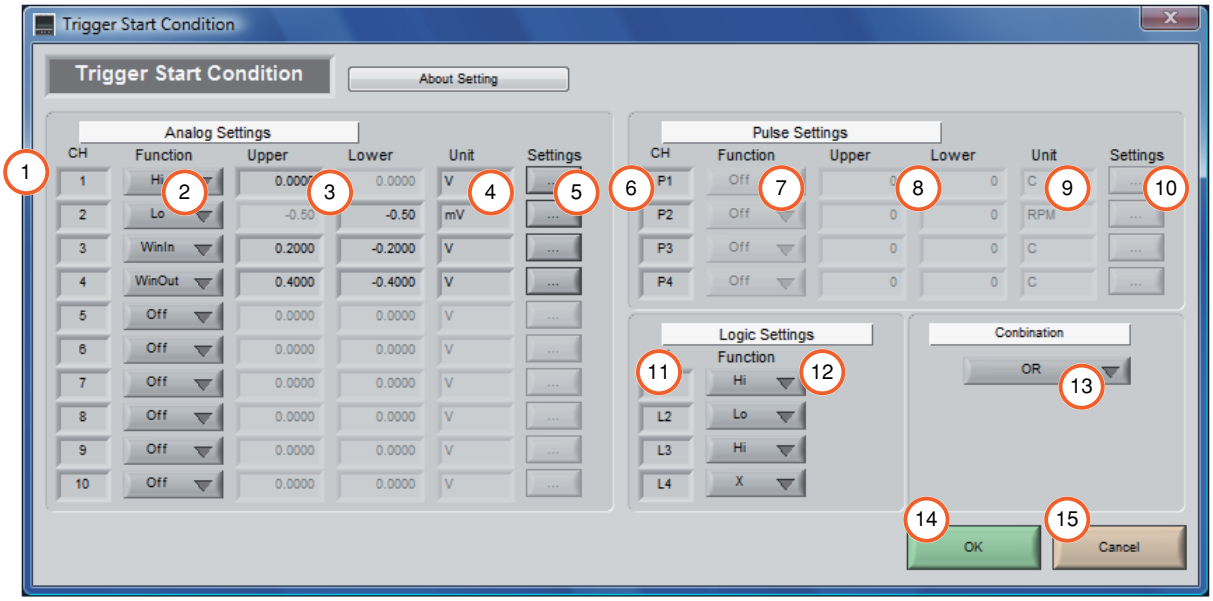
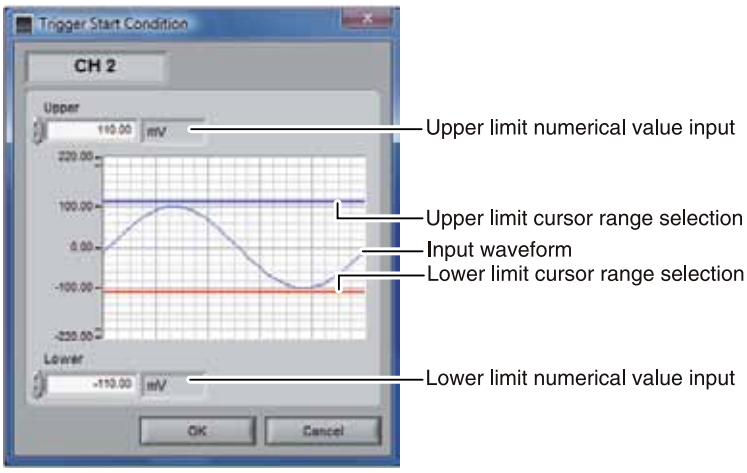
9-3-1 Trigger Start Condition

If "Level" has been selected for the Trigger setting, the "Trigger Start Condition" settings must be made.



No.	Name	Description	Ref. Section
①	CH	The channel numbers are displayed here.	
②	Function	Use this button to select the trigger level detection mode. Off: Disabled Hi: Detection is performed when the signal is rising. Lo: Detection is performed when the signal is falling. Win In: Detection is performed when the value is within the specified range. Win Out: Detection is performed when the value is outside the specified range.	
③	Upper/Lower	The level settings are displayed here.	
④	Unit	The unit is displayed here.	
⑤	Settings	Click this button to make the level settings.	Figure below
⑥	Pulse CH	The channel numbers for pulses are displayed here.	
⑦	Pulse Function	Use this button to select the pulse level detection mode. Off: Disabled Hi: Detection is performed when the signal is rising. Lo: Detection is performed when the signal is falling. Win In: Detection is performed when the value is within the specified range. Win Out: Detection is performed when the value is outside the specified range.	
⑧	Pulse Upper/Lower	The level settings are displayed here.	
⑨	Pulse Unit	The unit is displayed here.	
⑩	Pulse Settings	Click this button to make the pulse settings.	
⑪	Logic CH	The channel numbers for logics are displayed here.	
⑫	Logic Function	Use this button to select the logic setting. X: Disabled Hi: Detection is performed when the signal is rising. Lo: Detection is performed when the signal is falling.	
⑬	Combination	Use this button to set the combination of configured triggers. OR : Data capture starts (stops) when one of the configured trigger conditions is true. AND : Data capture starts (stops) when all of the configured trigger conditions are true.	
⑭	OK	Click this button to register your settings and close the screen.	
⑮	Cancel	Click this button to close the screen without registering your settings.	

Example of level setting screen



9-3-2 Alarm Condition

The alarm level settings for each input are made at this screen. Four types of alarm can be set for each channel.
The settings are the same as those described in Section 9-3-1, "Trigger Start Condition".
RC can be set as the alarm-dedicated item.
For details about RC, refer to the User's Manual on the CD.

No.	Name	Description	Ref. Section
①	Output	Use these buttons to set the number to output when an alarm occurs. Select a number between 1 and 4. The output is from the device's alarm output terminal. For the specification of the alarm output, refer to the device's User's Guide.	

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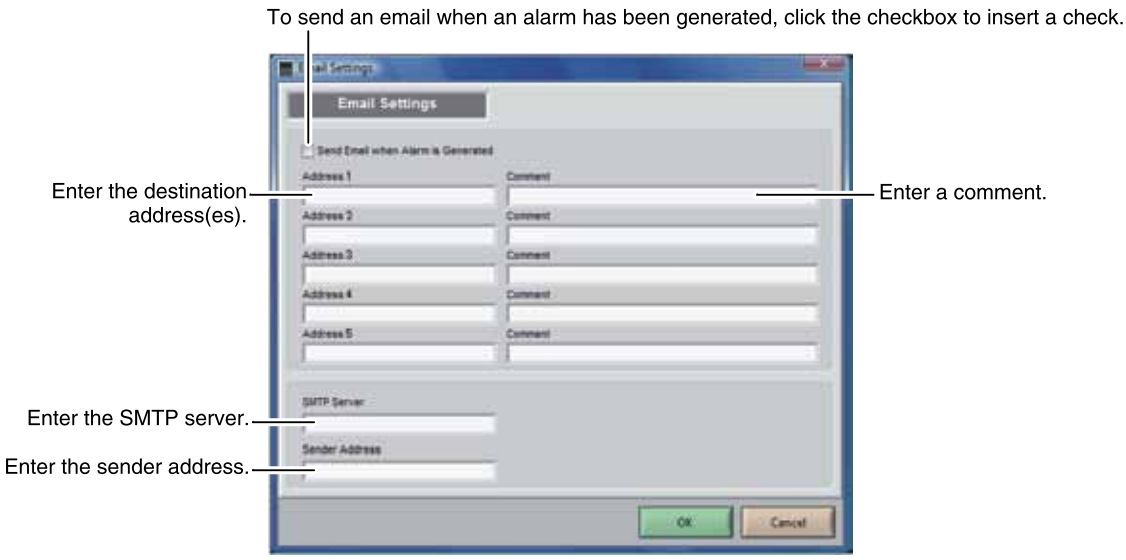
9-3-3 Send Email when Alarm is Generated

An email can be sent to a specified email address (or addresses) when an alarm is generated.
(An email sending environment must be enabled.)

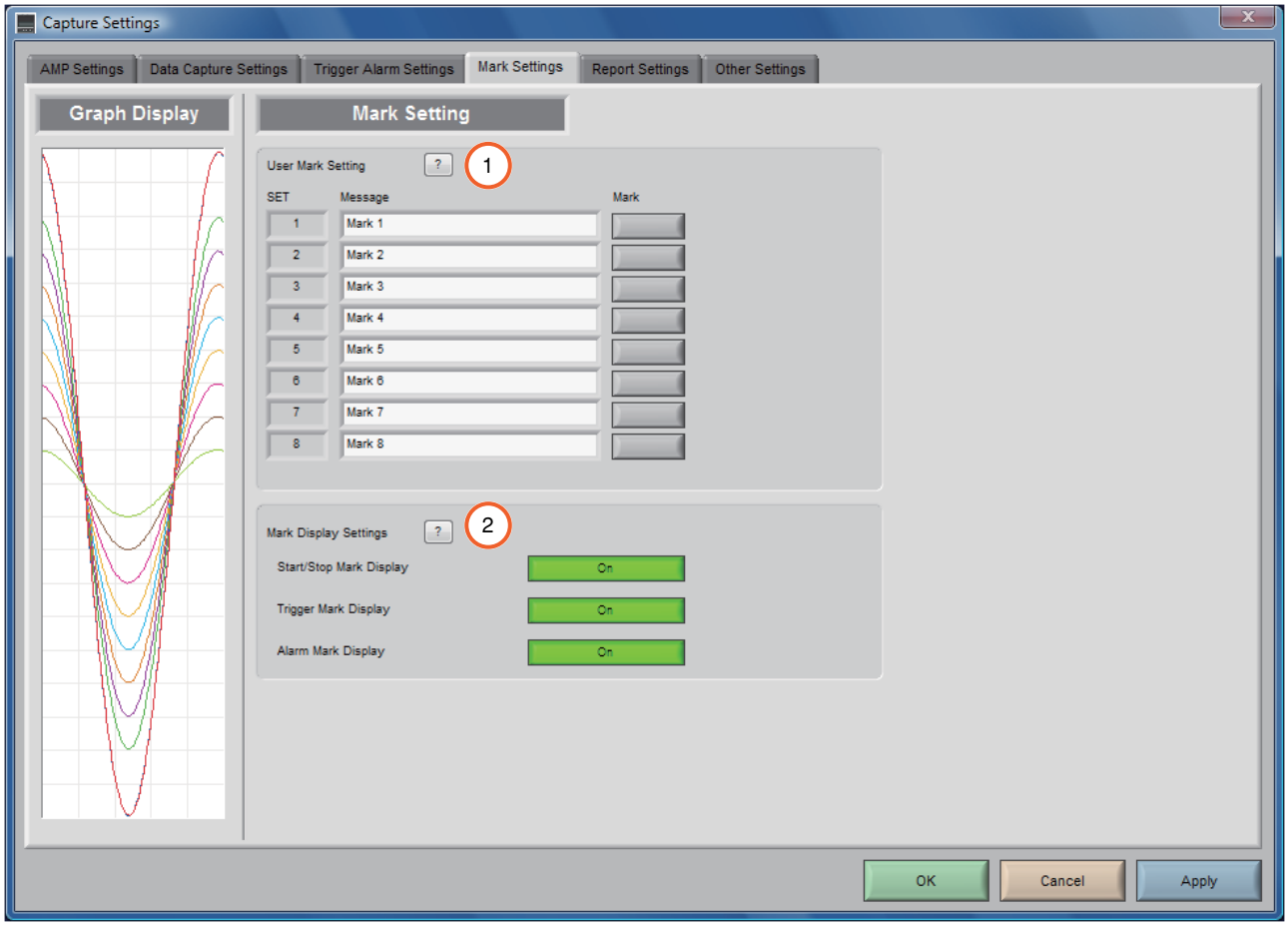


CAUTION!!

Mail transmission may be disabled with anti-virus software up and running.

In that case, change the relevant setting of the anti-virus software.

9-4. Mark



No.	Name	Description	Ref. Section
①	User Mark Settings	Register the message to be displayed with the mark. Alphanumeric characters are acceptable. Up to 30 single-byte characters can be used. The mark is displayed via the Mark icon.	
②	Mark Display Settings	You can display three types of system indicators, along with user-defined icons. These items enable/disable system indicator display. Start/Stop Mark Display : Enables/disables the mark display of the indicator to be displayed when measurement is started or stopped. Trigger Mark Display : Enables/disables the mark display of the indicator to be displayed when capturing is started with the trigger established. Alarm Mark Display : Enables/disables the mark display of the indicator to be displayed when a display alarm occurs.	

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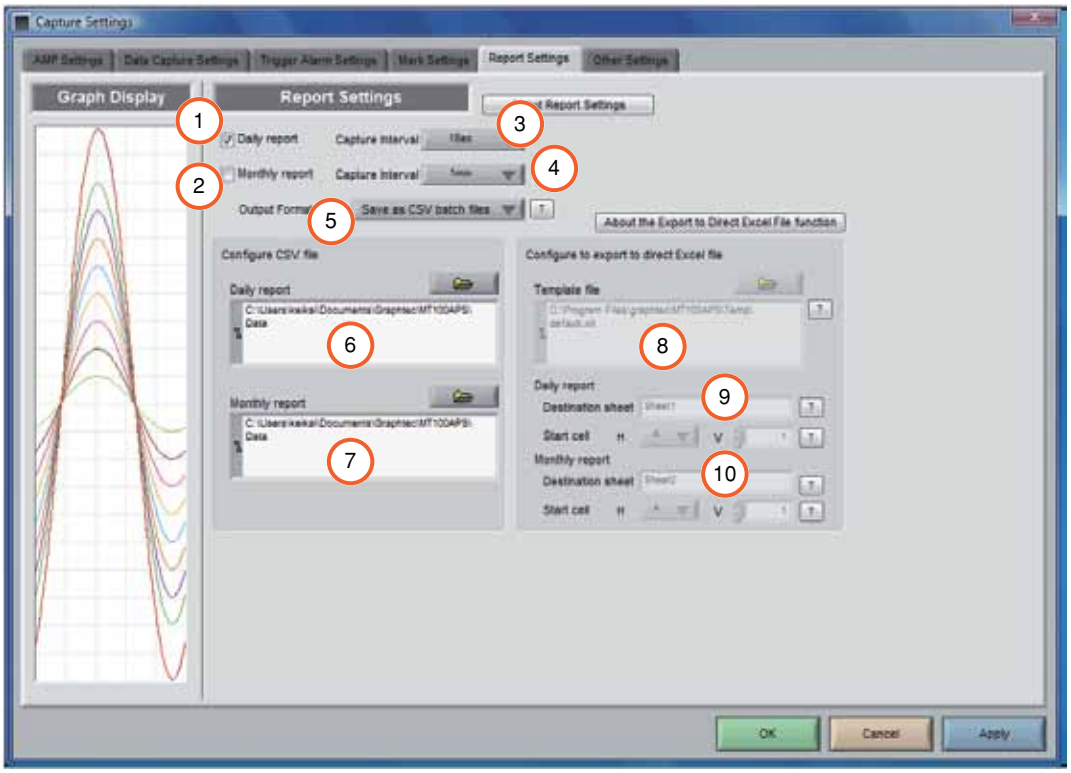
9-5 Report Settings

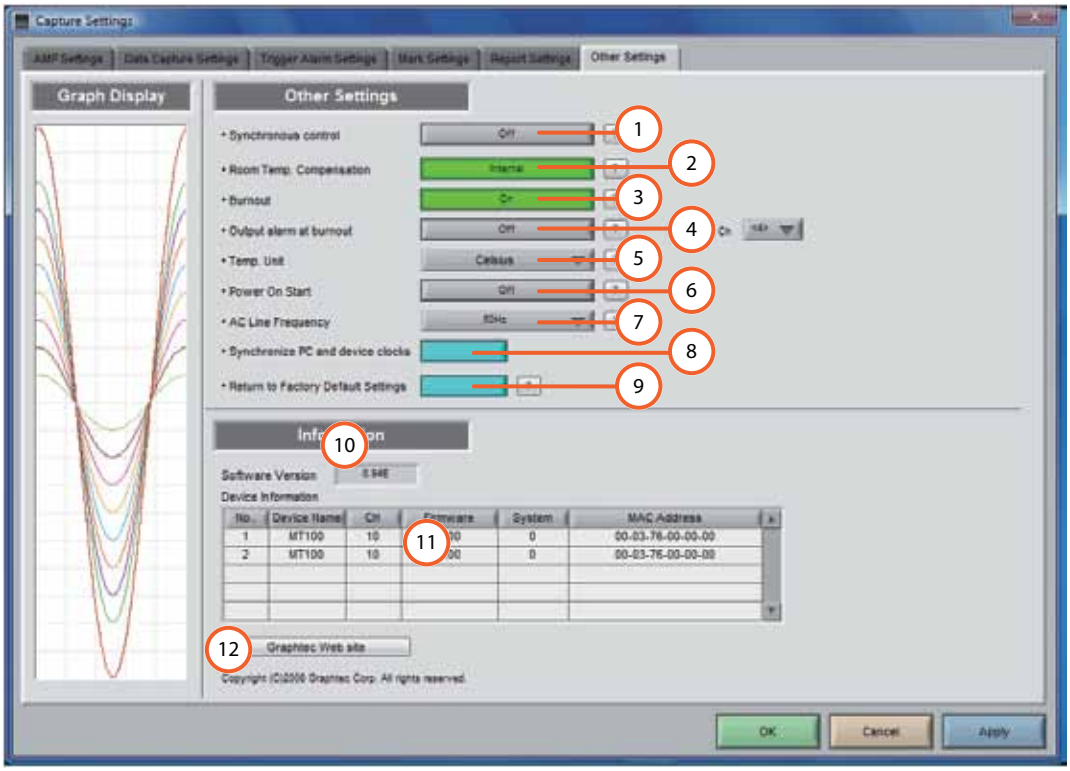
The daily report and monthly report settings, as well as the Direct to Excel settings, are made at this screen.
The daily and monthly reports are created as separate CSV files at capture intervals that are separate from those of the captured data.
The Export to Direct Excel File function transfers data in real time to an Excel file as it is being captured.
If a template is used for the Excel file, waveforms can also be drawn in Excel in real time.



No.	Name	Description	Ref. Section
①	Daily report	Click this checkbox to enter a check and enable the Daily report function.	
②	Monthly report	Click this checkbox to enter a check and enable the Monthly report function.	
③	Daily report Capture Interval	Use this button to select the daily capture interval. Available settings are 1, 5, 10, and 30 seconds, and 1, 5, 10, and 30 minutes. The selectable maximum speeds vary depending on how many channel are used.	
④	Monthly report Capture Interval	Use this button to select the monthly capture interval. Available settings are 1, 5, 10, and 30 minutes, and 1, 2, 6, 12, and 24 hours.	
⑤	Output Format	Use this button to select the output format for the report(s). Save as CSV batch files: The data is saved as CSV batch files. Export to direct Excel file: The captured data is exported directly to Excel. If a template file that was created in Excel is used, an original report can be created in real time. The template files that were provided as standard accessories can also be used.	
⑥	Configure CSV file: Daily report	This parameter is used to specify the save destination for the Daily report.	
⑦	Configure CSV file: Monthly report	This parameter is used to specify the save destination for the Monthly report.	
⑧	Template file	The template file settings for the Export to Direct Excel File function are made here. Files with the "xlt" and "xls" extensions can be used. Template files are provided as standard in the "Temp" folder that is installed with this software.	
⑨	Destination sheet	This parameter is used to specify the name of the specified template sheet.	
⑩	Start cell	This parameter is used to specify the start position on the sheet from which to transfer data.	

9-6 Other Settings

This screen is used to make various other settings and to display information.



No.	Name	Description	Ref. Section
①	Synchronous control	When multiple MT100 are connected, and if you start a measurement on one of them, all the others whose synchronization control set to On also start the measurement. The same is true for finishing a measurement. Trigger and capture settings operate at their own configured values. (Triggers or samplings cannot be synchronized.)	
②	Room Temp. Compensation	This parameter is used when thermocouples are used to perform temperature measurement. Set to On when performing the room temperature compensation on this device. (Always select On for this setting.)	
③	Burnout	Set to On to regularly check a thermocouple sensor line break. If a thermocouple is connected parallel with other measurement devices, please set this to Off as it may affect the other devices. When a sensor line break is detected, "BURN OUT" message appears.	
④	Output alarm at burnout	When set to On, an alarm is output when a burnout has occurred. If you have set this to ON, set the alarm number to be output.	
⑤	Temp. Unit	The display unit can be switched between Celsius and Fahrenheit.	
⑥	Power On Start	Data capture starts automatically as soon as the power to the device is turned on. This setting can only be specified for data capture to the device. If On has been selected, select "Save the settings to the device" when exiting this software.	12-4
⑦	AC Line Frequency	Set the voltage frequency to suit the area where the device will be used. Be sure to select the correct frequency, as an incorrect setting affects the noise reduction capability. The noise on the power source can be eliminated at a sampling rate of 500 ms or more:	
⑧	Synchronize PC and device clocks	Pressing this button transmits the time on the PC to the MT100. This function cannot be used if the network time feature has been on for the MT100.	
⑨	Return to Factory Default Settings	Click this button to return the settings to the default values.	
⑩	Software Version	The software version is displayed here.	
⑪	Device Information	Information relating to the connected device is displayed here.	
⑫	Graphtec Web site	Click this button to access the Graphtec web site.	

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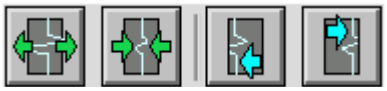
10. About Icons

This chapter describes icons.

(In this table: F = Operable during a Free Running, C = Operable during a data capture, R = Operable during a replay)

No.	Description	Operable behavior	Ref. Section
①	Shrinks the time axis.	C, R	
②	Expands the time axis.	C, R	
③	Expands the Y axis of the selected channel.	F, C, R	10-1
④	Shrinks the Y axis of the selected channel.	F, C, R	10-1
⑤	Click this button to move the selected channel position to the left.	F, C, R	10-1
⑥	Click this button to move the selected channel position to the right.	F, C, R	10-1
⑦	Displays plot marks at the sample points of a waveform.	F, C, R	10-2
⑧	Opens a sub-screen to: • Switch the scroll direction, • Set the scale axis, and • Reset the Y axis operation.	F, C, R	10-3
⑨	The message shown on the button can be displayed on the waveform screen. The mark is captured along with the data. Register the message from Record Settings and then Mark Settings.	C, R	10-5
⑩	Displays Cursor A in the waveform display.	C, R	10-4
⑪	Displays Cursor B in the waveform display.	C, R	10-4
⑫	Displays the level value for Cursor A in the digital value area.	C, R	
⑬	Displays the level value for Cursor B in the digital value area.	C, R	
⑭	Displays the level value for Cursor A-B in the digital value area.	C, R	

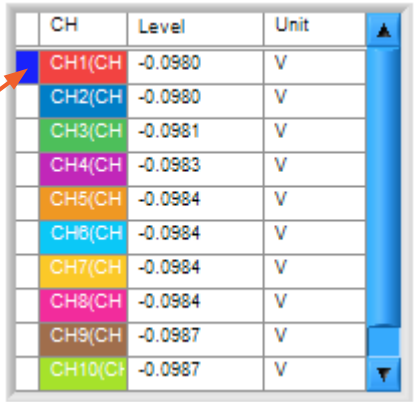
10-1 Expand, Shrink, or Move the Y Axis



Select a channel and click one of these icons to expand, shrink, or move the Y axis.

How to Select a Channel

Regular Y-T Screen



Highlight the Channels to be operated.

Enlarged Y-T Screen

Select a Channel to be operated.

CAUTION!!

There may be some deviation if you repeat the operation to change back to the original state. In this case, follow the steps in 10-3-3 "Reset the Y Axis Operation".

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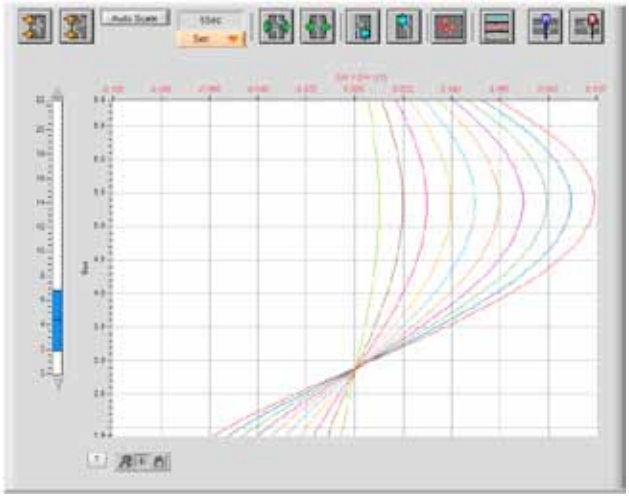
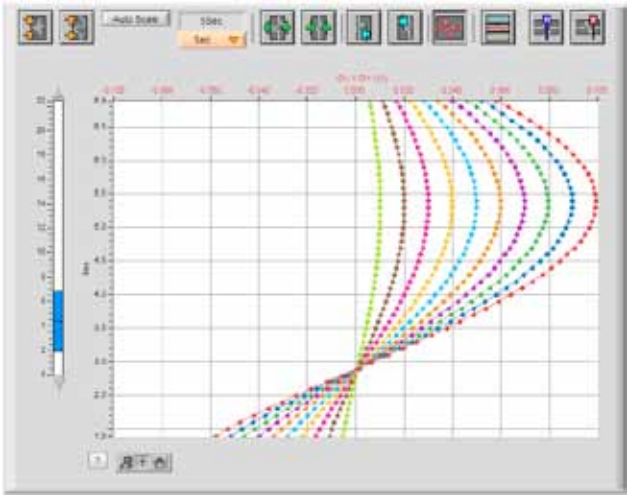
10-2 Plot Marks

The waveforms are plotted by interpolating sample points.
Click this icon to display marks for the actual sample points.



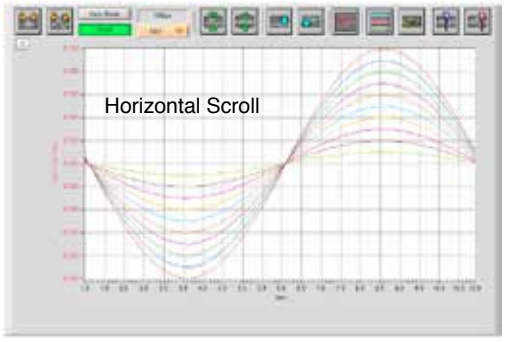


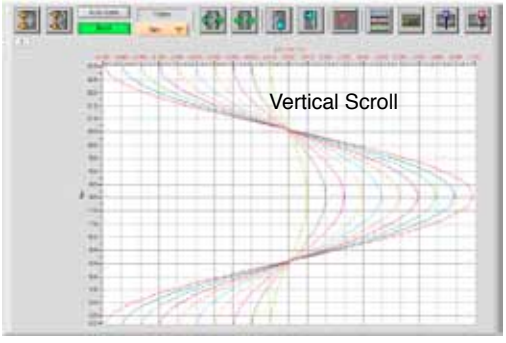
10-3 Y Axis Operations

Click this icon to open the sub-screen to perform Y axis operations.

10-3-1 Scroll Directions

Item	Description	Operable behavior
Scroll direction	In Y-T display screen, switches the scroll direction: Horizontal or Vertical.	F, C, R

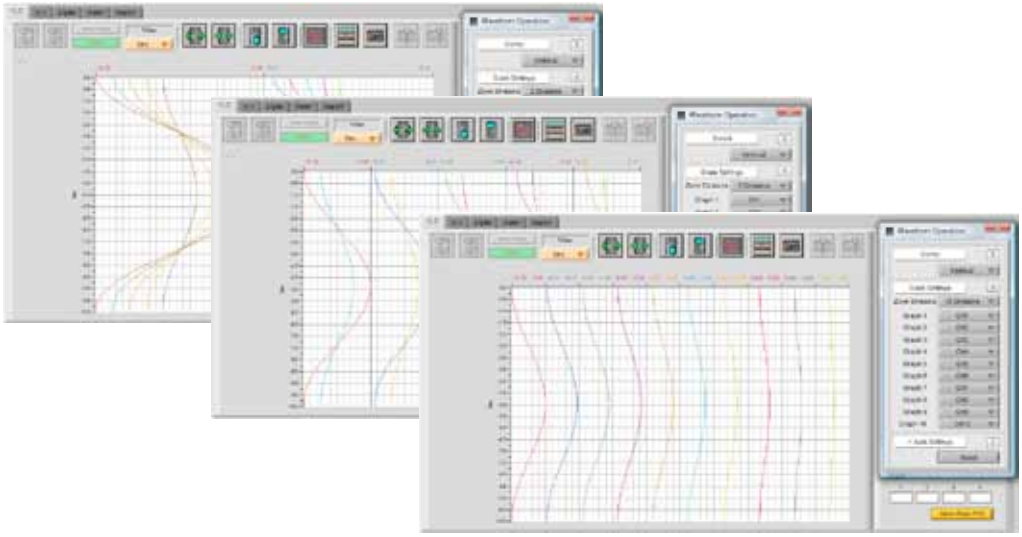




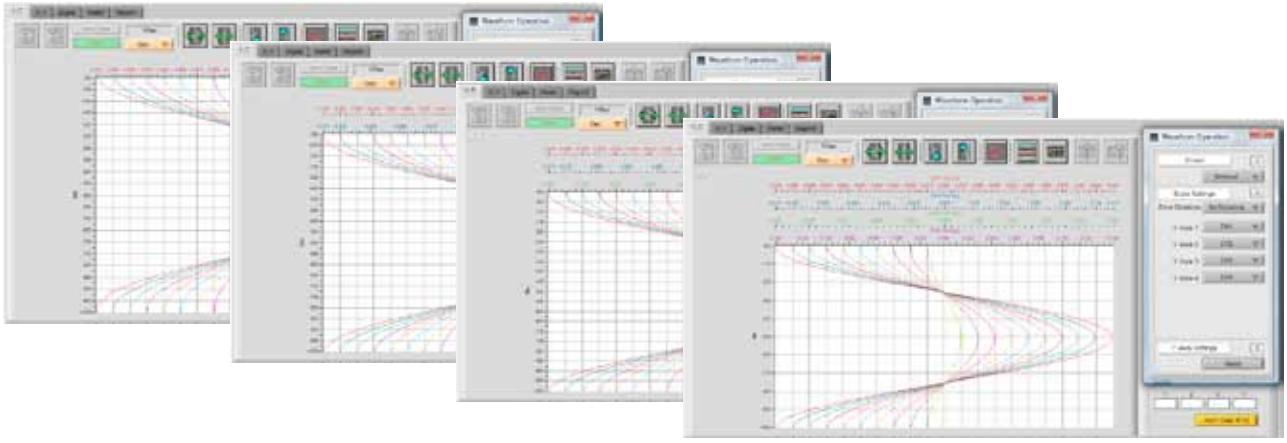
10-3-2 Scale Axis Settings

Item	Description	Operable behavior
Zone Divisions	Divides the zone for the waveform graph. You can select "No Division", "Divide by 2", "Divide by 5", or "Divide by 10". *Note: The zone division is not available in vertical scroll mode.*	F, C, R

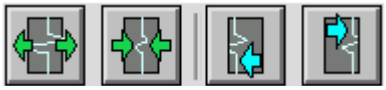
<Zone Division Screen>



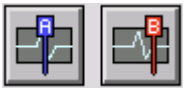
<Example of Y Axis Range Display>



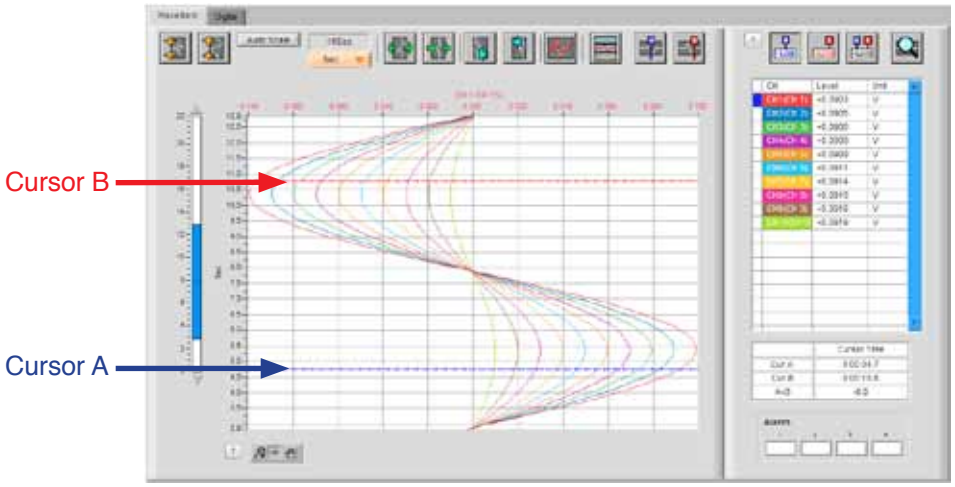
10-3-3 Reset the Y Axis Operation

Item	Description	Operable behavior
Reset	 *After using these icons to expand, shrink, or move the Y axis, click "Reset" to change back to the state before performing the operation. Select a channel to reset, and then click this key.*	F, C, R

10-4 Display Cursors



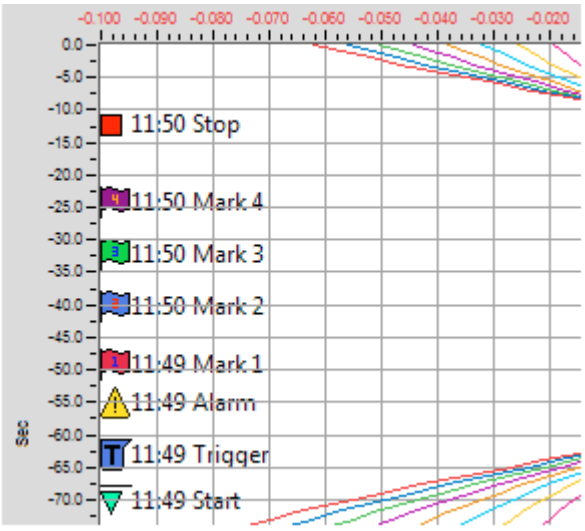
Click these icons to show cursors in the waveform display.



10-5 Mark

The message shown on the button can be displayed on the waveform screen.

The mark is captured along with the data.



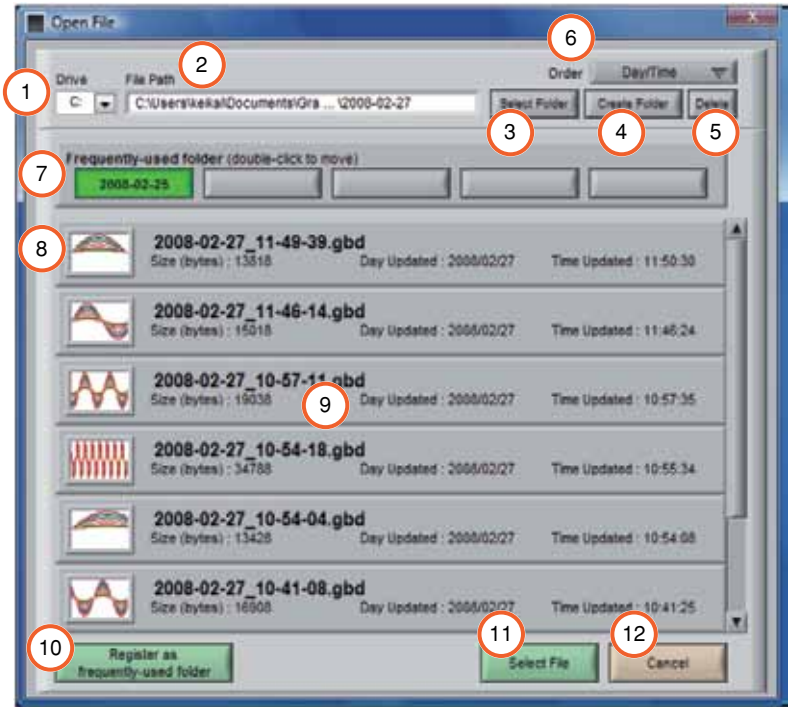
11. Replay Data

11-1 Replay Data Captured to the PC

This section explains how to replay data that has been captured to your PC (personal computer).

Click [Review PC] button.

The data files captured to the PC will be displayed together with thumbnails (small index images).



No.	Name	Description	Ref. Section
①	Drive	Use this button to select the appropriate PC drive.	
②	File Path	The file location is displayed here.	
③	Select Folder	Click this button to select the folder that has data files.	
④	Create Folder	Click this button to create a new folder.	
⑤	Delete	Click this button to delete the selected file.	
⑥	Order	Use this button to select the file arrangement order. File Name: The files are arranged by file name. Day/Time Updated: The files are arranged starting from the latest updated day/time.	
⑦	Frequently-used folder	Use these buttons to select a frequently-used folder and move the file to that folder. Single click : Select Double click : Move	
⑧	Waveform thumbnail	The captured data is displayed as a compressed waveform. Thumbnails can only be displayed for data that was captured using this software. Moreover, data that was captured to the device itself cannot be displayed as thumbnails.	
⑨	File list	The captured data is displayed in a list format.	
⑩	Register as frequently-used folder	Click this button to register the currently displayed folder as one of the frequently-used folders. After registering, it is added to Item ⑦ "Frequently-used folder".	
⑪	Select File	Click this button to select a file (display the file).	
⑫	Cancel	Click this button to cancel the selected file.	

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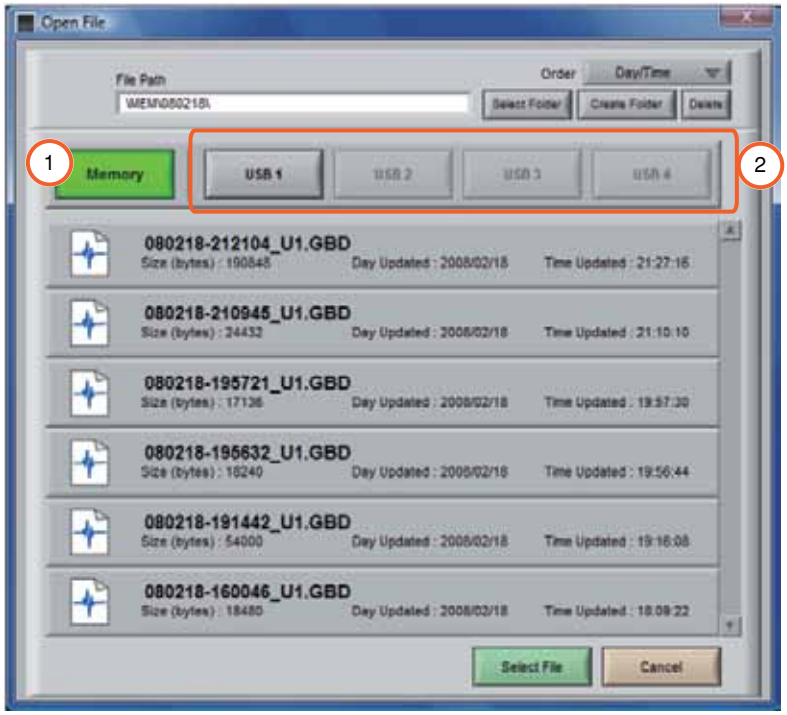
11-2 Replay Data Captured to the Device

Replay data that has been captured to the device.

Click Review Device button.

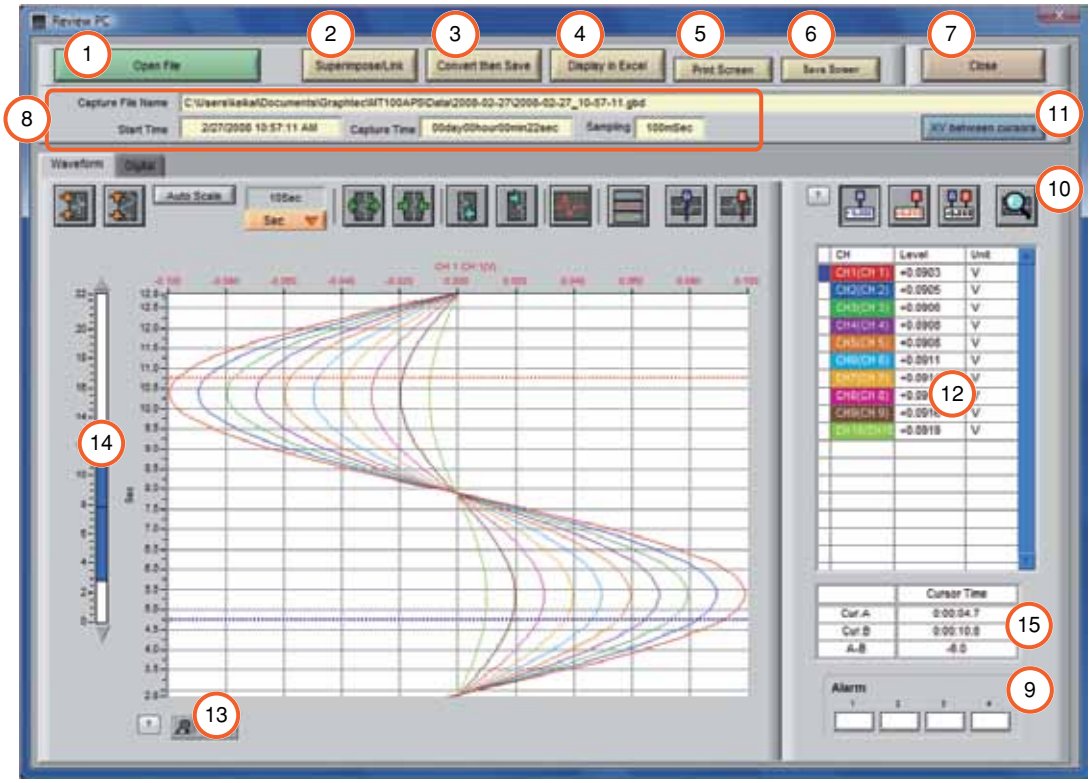
The data captured to the device are displayed.



No.	Name	Description	Ref. Section
①	Device Memory	Click this button to display the files saved to the internal memory.	
②	USB device	Click the appropriate button to display the files saved to the selected USB device.	

11-3 Review PC (Waveform Display)

These operations can also be performed for Review device.



No.	Name	Description	Ref. Section
①	Open File	Click this button to select the data to replay.	
②	Superimpose/Link	Click this button to display a screen showing superimposed or linked data from multiple files saved in PC.	11-3-1
③	Convert then Save	Click this button to convert the replayed data to a different file format (GBD, CSV) or to clip and save only the data between the cursors.	11-3-2
④	Display in Excel	Click this button to display the captured data in Excel format. The Microsoft Excel program must be installed before you can use this function.	11-3-3
⑤	Print Screen	Click this button to print out a copy of the displayed screen at your default printer.	
⑥	Save Screen	Click this button to save the displayed screen as a BMP file.	
⑦	Close	Click this button to close the replay screen.	
⑧	Replay information	The replay information is displayed here. Capture File Name: The name of the data capture file that is being replayed. Start Time: The time at which data capture was started. Capture Time: The data capture time Sampling Interval: The sampling interval	
⑨	Alarm	Click this button to display the alarm port status.	11-3-4
⑩	Search	Click this button to perform data search.	11-3-5
⑪	XY between cursors	Click this button to display the data between the A and B cursors in X-Y format.	11-3-6
⑫	Digital	The digital values are displayed in this area. Clicking on any of the CH numbers enables the waveform for that channel to be hidden/displayed. The channels for which an alarm has been generated are shown in red.	
⑬	Scale operations	Use this area to auto-scale X axis, enlarge the selected area, etc.	11-3-7
⑭	Scroll bar	Use this bar to move the waveform.	
⑮	Cursor Time	The cursor times are displayed here.	

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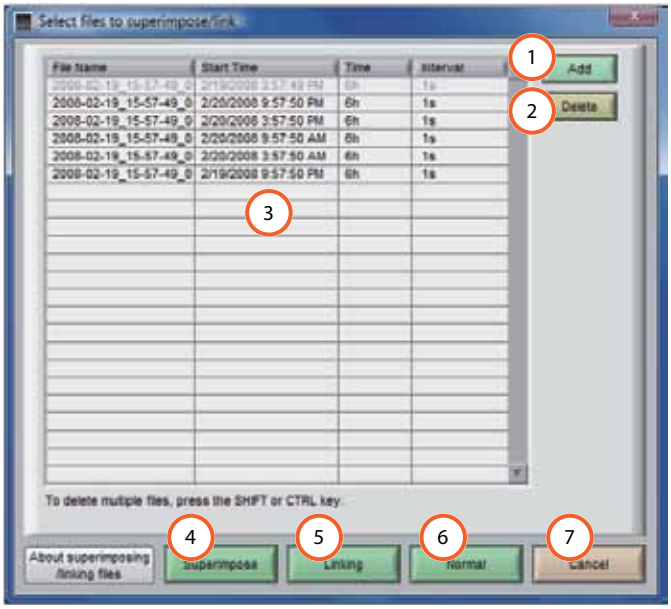
11-3-1 Superimpose/Link

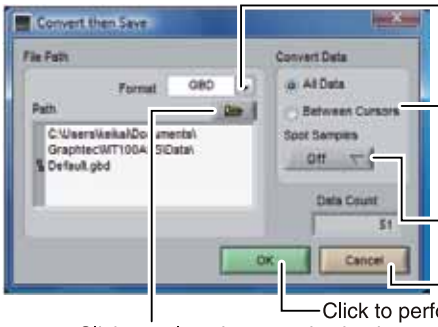
This function enables multiple files to be superimposed on the display, or to be linked.
The data must be captured under the same conditions to be linked.



No.	Name	Description	Ref. Section
①	Add	Click this button to add a file to those selected for the superimposing or linking operation.	
②	Delete	Click this button to delete the added file from the list.	
③	File list	The files added to those selected for superimposing or linking are listed here.	
④	Superimpose	Click this button to superimpose files.	
⑤	Linking	Click this button to link files.	
⑥	Normal	Click this button to open the original file without performing any superimposing or linking operations.	
⑦	Cancel	Click this button to close the screen.	

11-3-2 Convert then Save

This function is used to convert replayed data to a different format (GBD, CSV), and to clip and save only the data between the cursors.



Save format setting
• GBD : Binary data
• CSV : Text data for use in an Excel file

Data to be converted
• All Data : All the data is converted.
• Between Cursors : Only the data between the cursors is converted.

Spot Samples
Use this button to specify spot sampling of the data.

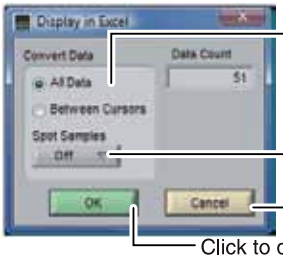
Click to close the screen.

Click to perform data conversion.

Click to select the save destination.

11-3-3 Display in Excel

This function is used to launch Excel and display the data in a new worksheet.
(The Microsoft Excel program must be installed in order for this function to be used.)



Data to be converted
- All Data : All the data is converted.
- Between Cursors : Only the data between the cursors is converted.

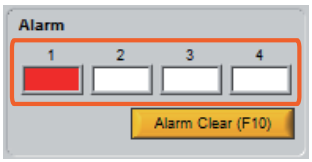
Spot Samples
Use this button to specify spot sampling of the data.

Click to close the screen.

Click to display the date in an Excel file.

11-3-4 Alarm

The alarm output port status is displayed in this screen, together with the Alarm Clear button.
During replay, it shows the alarm output port status at the cursor point selected in the digital value display.
The Alarm Clear button is disabled during replay.



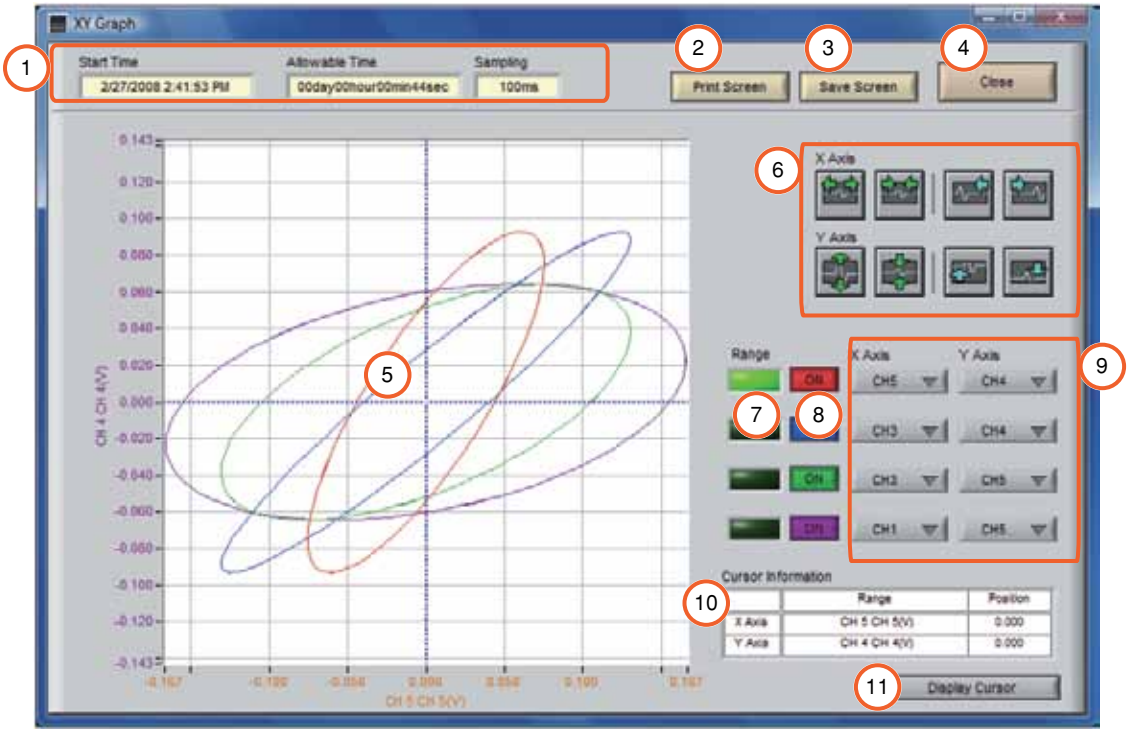
Red = alarm generated; White = alarm not generated

11-3-5 Search

Analog Search ("Edge" is used for the search judgment criterion.)		
CH	Use this button to select the CH to be searched.	R
Slope	Use this button to select the slope to use for performing the search. H : Search for a rising signal. L : Search for a falling signal.	R
Level	Use this button to set the search level.	R
Prev. Search	Search in the past direction.	R
Next Search	Search in the forward direction.	R
Alarm Search ("Edge" is used for the search judgment criterion.)		
Alarm	This parameter is used to specify the alarm port number (fixed).	R
Generated/Cleared	Use this button to set the alarm status in which searches are performed. Generated : Performs search when an alarm is generated. Cleared : Performs search when an alarm is cleared.	R
Prev. Search	Search in the past direction.	R
Next Search	Search in the forward direction.	R
Max/Min		
CH	Use this button to select the CH to be searched.	R
Search Max	A search is made for the maximum value data.	R
Search Min	A search is made for the minimum value data.	R

11-3-6 XY between Cursors

This function is used to display the data between the A and B cursors in an XY format.



No.	Name	Description	Ref. Section
①	Replay Information	The replay information is displayed here. Start Time: The time at which data capture was started. Capture Time: The data capture time Sampling Interval: The sampling interval	
②	Print Screen	Click this button to print a copy of the screen at the default printer.	
③	Save Screen	Click this button to save the screen in BMP format.	
④	Close	Click this button to close the screen.	
⑤	X-Y Waveform Graph	The X-Y waveform graph is displayed here.	
⑥	Waveform operation icons	Use these buttons to expand, shrink, or move X and Y axes.	
⑦	Range	These buttons specify display of the scale values for the channels selected for the X and Y axes.	
⑧	ON/OFF	Click these buttons to specify the display as ON or OFF.	
⑨	X Axis/Y Axis Channel settings	Use these buttons to select the channels for the X and Y axes.	
⑩	Cursor Information	The cursor levels of the channels for which Range has been specified are shown here.	
⑪	Display Cursor	Click this button to move the cursor to the center of the graph.	

11-3-7 Scale Operations

Use this area to perform scale operations, enlarge the selected area, etc.

The magnifier shaped icon does not control the voltage/temperature axis.

It controls the time axis only.

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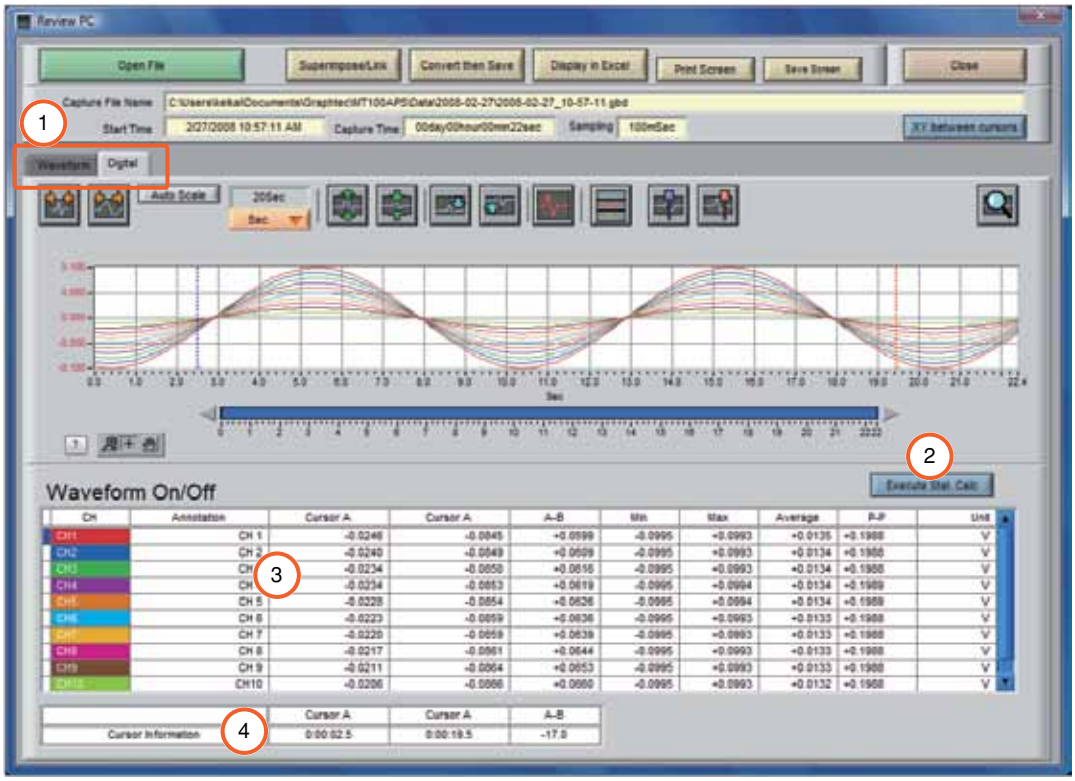
11-4 Review PC (Digital Display)

You can select "Digital" tab to switch to the digital display.
The Digital screen is used mainly to perform operations such as statistical calculation using the A and B cursors.



No.	Name	Description	Ref. Section
①	Display switching tabs	Click one of the tabs to switch between Waveform and Digital displays.	
②	Execute Stat. Calc	Click this button to perform statistical calculation of the data between Cursors A and B.	
③	Digital display	The cursor A and B levels, calculation results, and so forth are displayed here.	
④	Cursor Time	The cursor A and B times are displayed here.	

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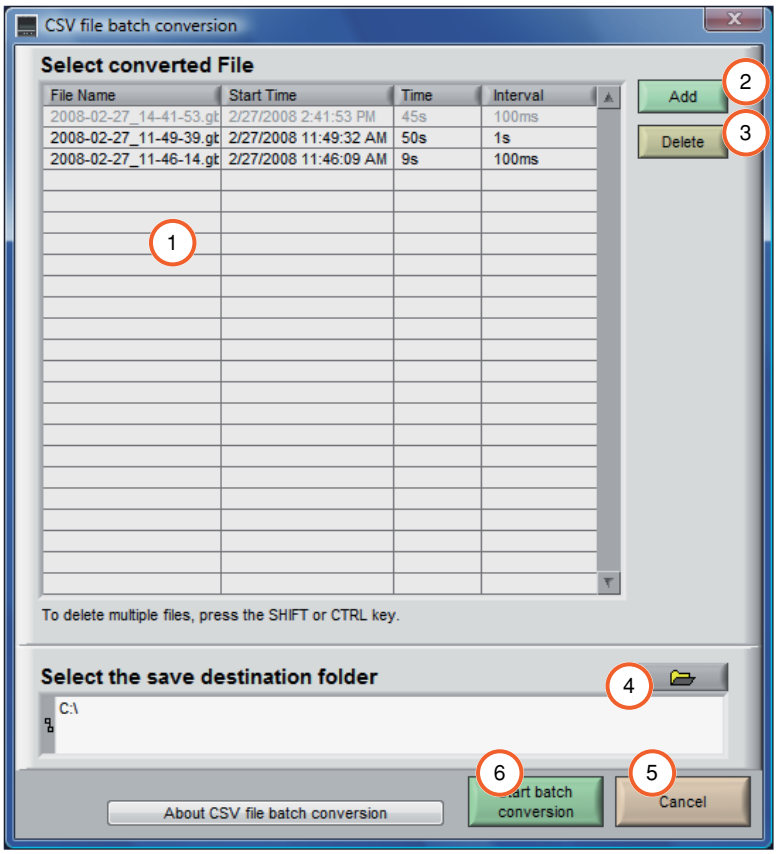
12. Other Functions

12-1 CSV File Batch Conversion

CSV file batch conversion

This function enables multiple GBD (binary data) files to be converted in a batch to CSV format files.



No.	Name	Description	Ref. Section
①	List of converted files	The batch-converted files are displayed in a list.	
②	Add	Click this button to add a file to the batch to be converted.	
③	Delete	Click this button to remove a file from the batch to be converted.	
④	Save destination folder	Select the save destination for the batch-converted files here.	
⑤	Cancel	Click this button to cancel the batch conversion operation and close the screen.	
⑥	Start batch conversion	Click this button to start batch file conversion.	

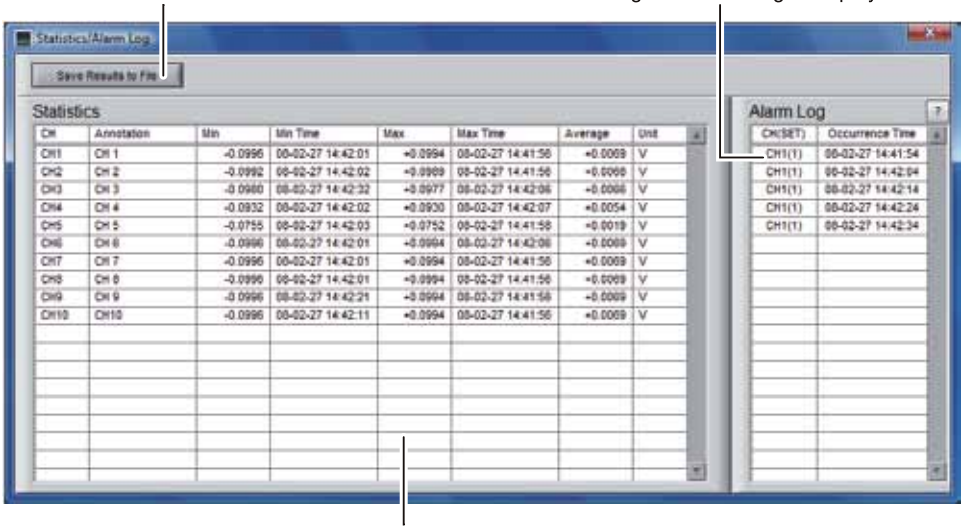
12-2 Statistics/Log

Statistics/Log Display

The statistical calculation and alarm log results are displayed in this screen.

Save results to a CSV file.

Alarm Log: The alarm log is displayed here.



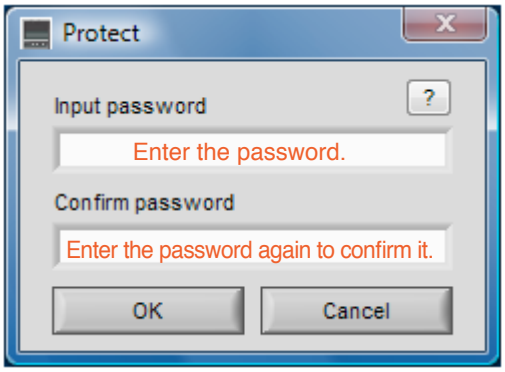
Stat. Calc: The statistical calculation results are displayed here.

12-3 Protect

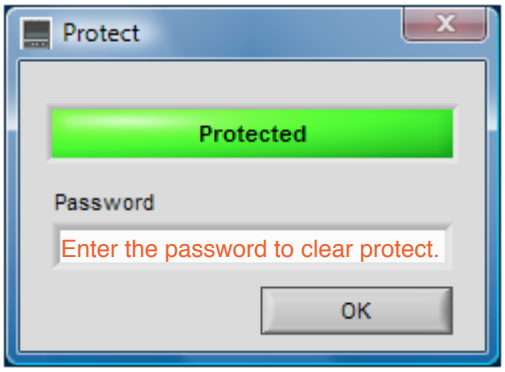
Protect

Click this button to protect all the operations of this software. To clear it, password should match.

Protect Setting Screen



Protected / Protect Clear Screen



CAUTION!!

Protect is effective only on this software.

Note that you can exit this software by using Windows operations.

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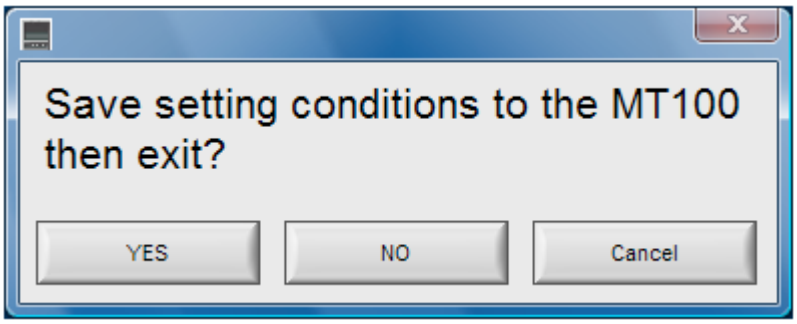
12-4 Exit Software

Click this button to exit this software. When you click this button, the following appears:



Yes : Click this button to save the setting conditions on this software in the MT100 device and exit.
Note that it cannot save all the settings. Some settings cannot be saved.

No : Click this button to exit without saving the setting conditions on this software in the MT100 device.
The setting conditions on MT100 device revert to the state before controlling the software.
In this case, please power off and back on the device.

Cancel : Click this button to cancel the termination of this software.

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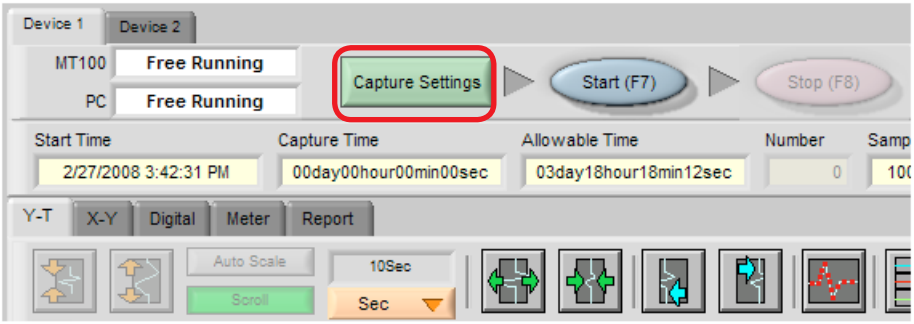
13. Operating Procedure

This chapter describes the basic operating procedure.
The operating procedure starts with the software and the device in the connected status.
For the connection procedure, see Section 4, "Connecting to a PC (Personal Computer)".
The settings that are not addressed in the following sections are the factory default settings.

No.	Operation	Description
①	Capture Settings	Make the settings required for data capture.
②	Start	Start data capture.
③	Displaying past data during a data capture operation	Select Off for "Scroll" to display past data.
④	Stop	Stop data capture.
⑤	Replay Data	Replay data captured to the PC (personal computer).

13-1 Capture Settings

Click the "Capture Settings" button to make the settings required for data capture.

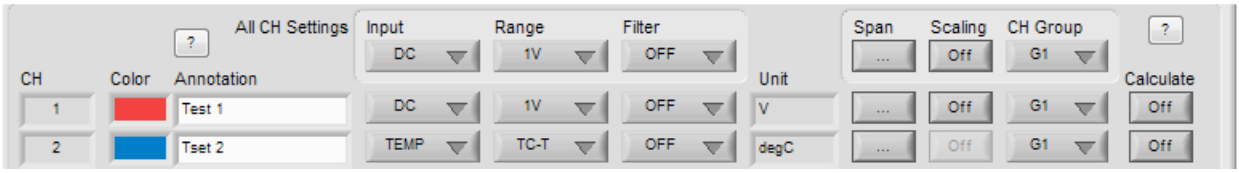


13-1-1 AMP Settings

Make the input settings shown below.

CH used	2 channels (CH 1 and CH 2)
Input	CH 1: DC CH 2: TEMP
Range	CH 1: IV CH 2: TC-T

Make the settings as shown in the following screen:



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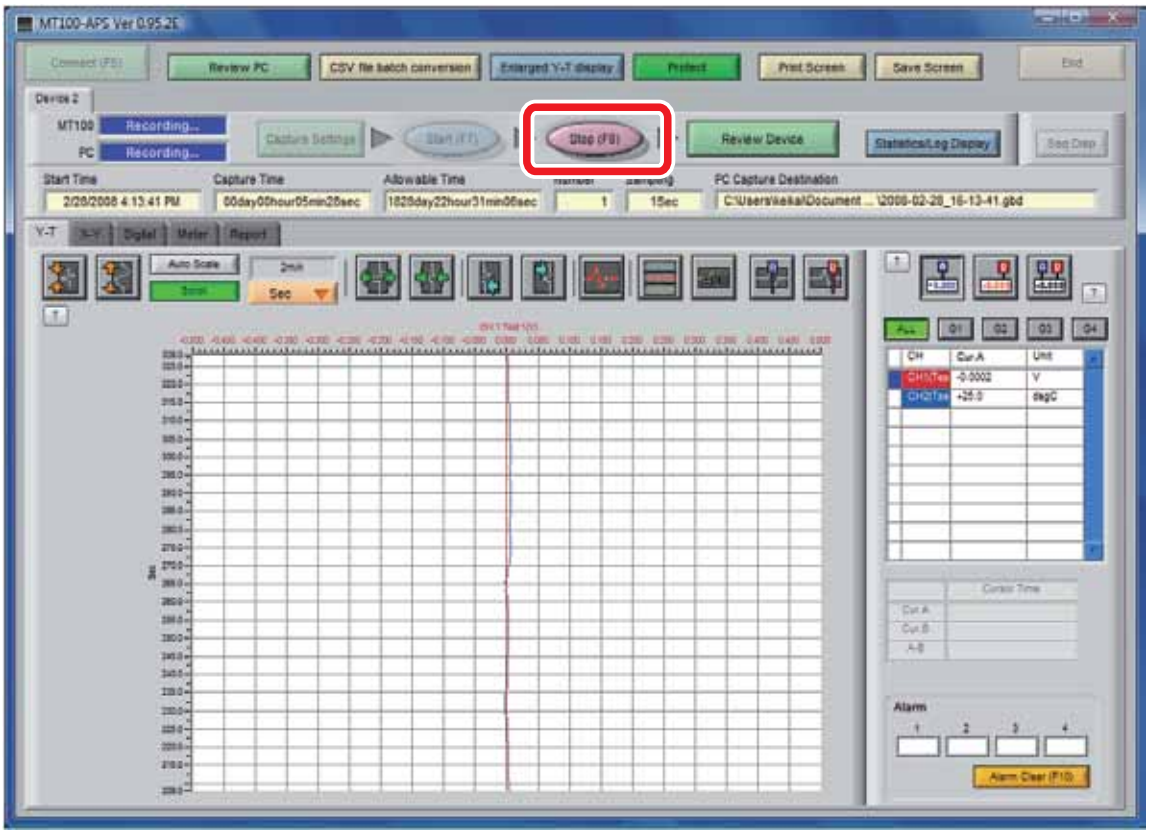
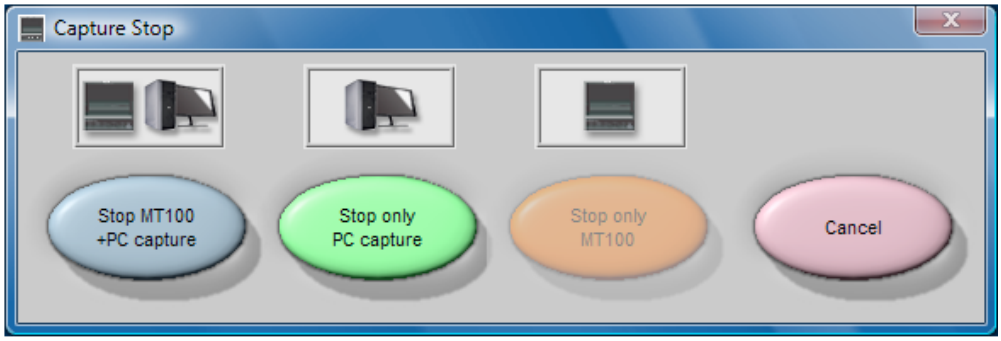
13-4 Stop

Click the "Stop" button.





As the Capture Stop window opens, press the "Stop MT100+PC capture" button.

Data capture stops, and the device returns to the Free Running status.

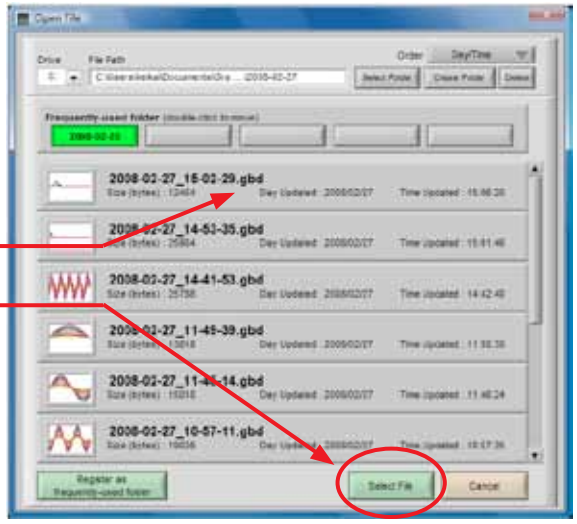
13-5 Replay Data

Data that has been captured to the PC (personal computer) can be replayed. Replaying the data enables you to view the captured data, and aligning the cursors enables you to browse the reference values.

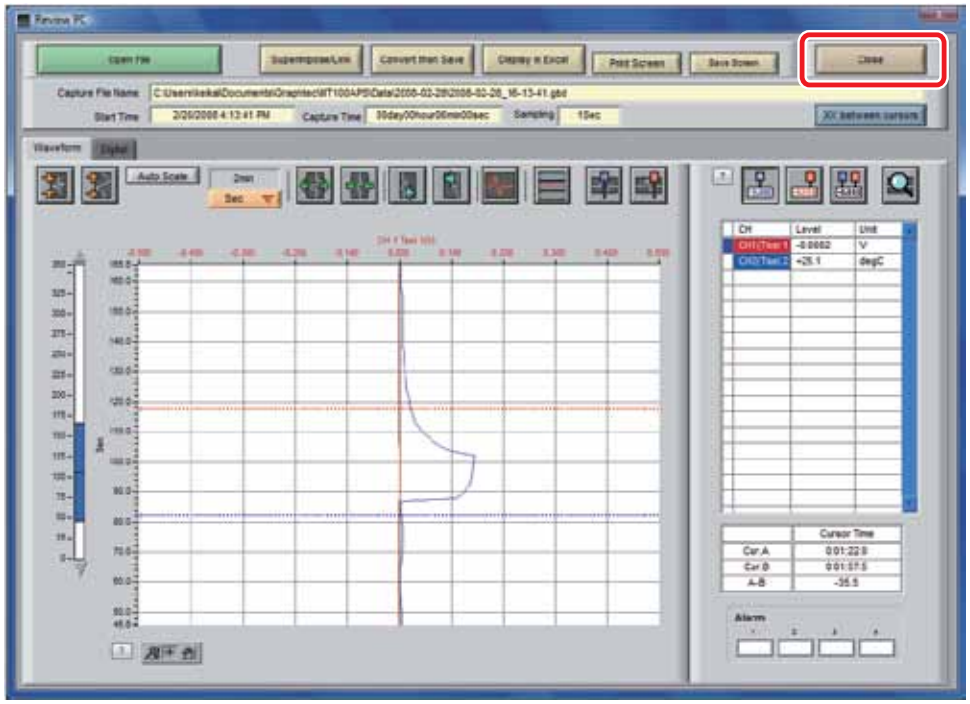
Click the "Review PC" button.

The file selection screen opens.
Open the file to which the data was captured.
A thumbnail waveform is displayed at the left of each file name, enabling you to confirm the data contents without opening each file.

Select the file that you want to open, and then click the "Select File" button.



The selected file is replayed.
While the data is being replayed, you can move the scroll bar to view the waveforms, or align the cursors to browse the reference values. In addition to these, various other functions can also be used. For further details, see Section 11-3, "Review PC (Waveform Display)". To end data replay, click the "Close" button.



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Specifications are subject to change without notice.
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